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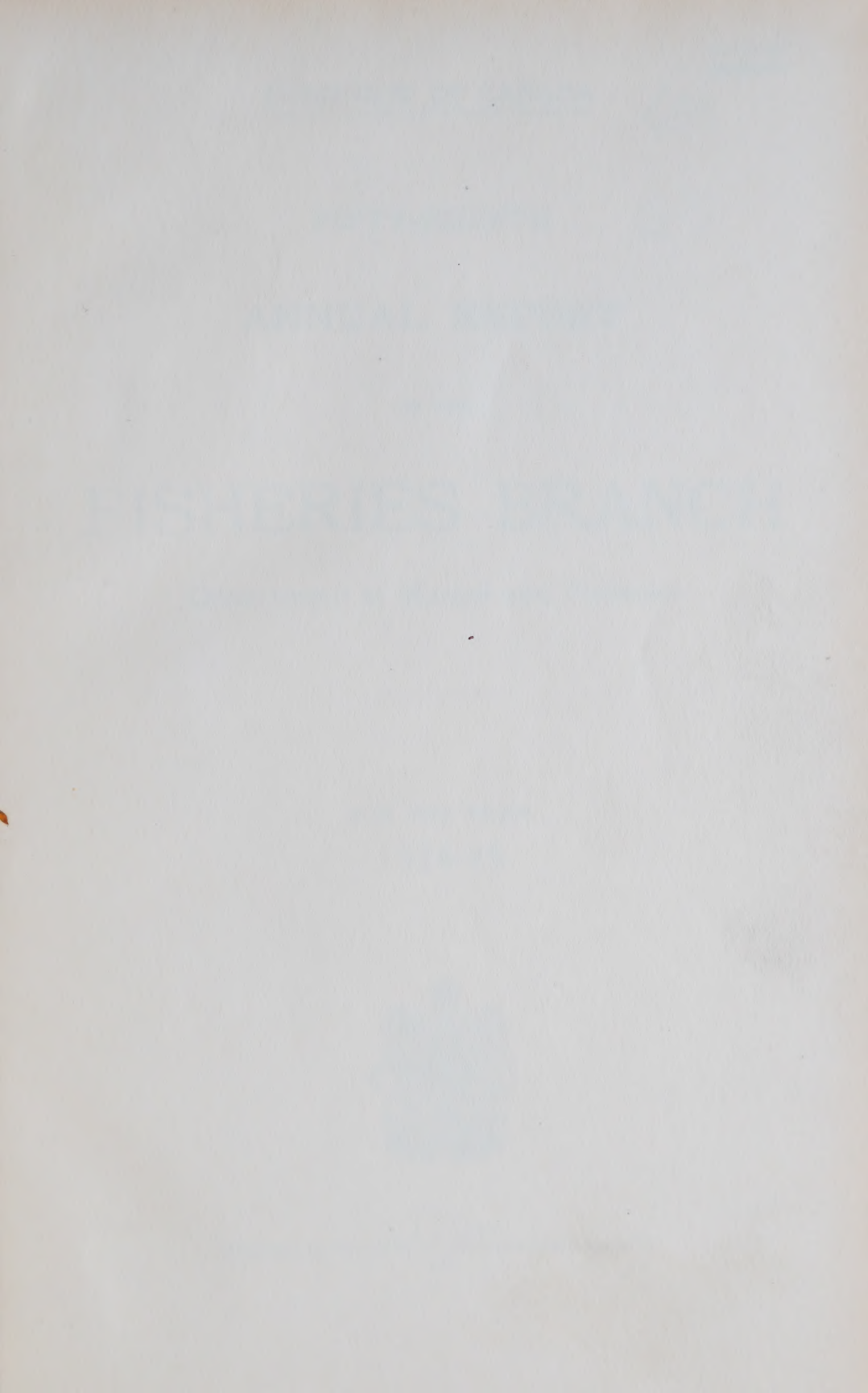




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DOMINION OF CANADA

6571

FIFTY-EIGHTH

32

ANNUAL REPORT

OF THE

# FISHERIES BRANCH

Department of Marine and Fisheries

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FOR THE YEAR

1924-25



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1925

DOMINION OF CANADA

FIFTY-EIGHTH

ANNUAL REPORT

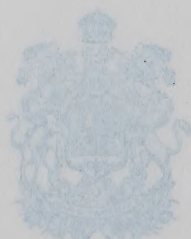
OF THE

FISHERIES BRANCH

Department of Marine and Fisheries

FOR THE YEAR

1934-35



OTTAWA  
R. A. AGLAND  
PRINTED TO THE KING'S MOST EXCELLENT MAJESTY  
1935



## DEPUTY MINISTER'S REPORT

To the Hon. P. J. A. Cardin,  
Minister of Marine and Fisheries

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To General His Excellency the Right Honourable Lord Byng of Vimy, G.C.B.,  
G.C.M.G., M.V.O., Governor General and Commander in Chief of the  
Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of your Excellency  
and the Parliament of Canada, the Fifty-eighth Annual Report of the Fisheries  
Branch of the Department of Marine and Fisheries.

I have the honour to be,

Your Excellency's most obedient servant,

P. J. A. CARDIN,

Minister of Marine and Fisheries.

DEPARTMENT OF MARINE AND FISHERIES,  
OTTAWA, August, 1925.

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## DEPUTY MINISTER'S REPORT

To the Hon. P. J. A. CARDIN,  
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the Fifty-eight Annual Report of the Fisheries Branch of the Department, which is for the fiscal year ended March 31, 1925.

The report deals with the following subjects:—

- Review of the Fisheries of 1924.
- Operation of the Fish Inspection Act.
- The Inspection of Canneries and Canned Foods.
- Fisheries Intelligence Service.
- Fish Publicity Campaign.
- Fishing Bounty.
- Fish Culture.
- North American Committee on Fish Investigations.
- Work of the Biological Stations.
- Technical Classes for Fishery Officers.
- Natural History Observations.

Appendices to the report include the following:—

- Reports of Inspectors of Fisheries.
- Fisheries Expenditure and Revenue.
- Fishways and Removal of Obstructions.
- Summary of Licenses issued.
- Entries of United States Fishing Vessels.

### REVIEW OF THE FISHERIES OF 1924

There was a somewhat greater production of fish on both the Atlantic and Pacific coasts during 1924, while in the inland parts the catch was slightly above that of the previous year. The value of the total catch when marketed, however, shows a very substantial increase of almost \$2,000,000.

The marketed value of the fisheries of each province is shown in the following table, together with the value for the preceding year.

	1924	1923
Nova Scotia.....	\$ 8,777,251	\$ 8,448,385
New Brunswick.....	5,383,286	4,548,535
Prince Edward Island.....	1,201,772	1,754,980
Quebec.....	2,283,314	2,100,412
Ontario.....	3,557,587	3,159,427
Manitoba.....	1,232,563	1,020,595
Saskatchewan.....	482,492	286,643
Alberta.....	339,107	438,737
British Columbia.....	21,257,567	20,795,914
Yukon Territory.....	18,773	11,917
	\$ 44,534,235	\$ 42,565,545

It will be seen from this statement that only two provinces show a decrease in the value of their fisheries, viz., Prince Edward Island and Alberta. In the case of Prince Edward Island, the decrease is due to the poor catch in the lobster fishery, while the statistics for Peter Pond Lake, which formerly were shown in Alberta, are this year included in Saskatchewan instead of Alberta, which practically makes up for the decrease in the latter province.

#### ATLANTIC FISHERIES

*Cod, Haddock, Hake and Pollock.*—2,433,234 cwts. of these fish were taken compared with 2,241,799 cwts. in the preceding year, or an increase of 191,435 cwts. The catch of each kind shows an increase in Nova Scotia. The Lunenburg fishing fleet was slightly larger than in the year previous and had a very successful season, making larger catches and obtaining better prices than in the previous year. In New Brunswick there was a decrease in the catch of cod and pollock. Cod and hake were landed in larger quantities in Prince Edward Island and the catch of cod increased in Quebec.

It is interesting to note that the quantity of these kinds marketed in a fresh condition rose from 247,737 cwts. in 1923 to 331,421 cwts.

*Mackerel, Herring and Sardines.*—The total catch of these three kinds was 1,600,179 cwts., which is an increase of 496,543 cwts. There were 844,461 cwts. of herring taken, or an increase of 151,696 cwts. The provinces of Quebec and Prince Edward Island show a decrease in the fishery, while the New Brunswick and Nova Scotia catches were much larger, the latter provinces showing an increase of 101,527 cwts. More of these fish were smoked by the fishermen, who received more for them on this account than by selling the herring fresh. A good increase is noted in the quantity of pickled herring put up in Nova Scotia.

There were 215,590 cwts. of mackerel landed, which is an increase of 73,841 cwts. over that of the year previous. These fish were quite plentiful and for the first time in many years remained around the shores of Prince Edward Island all summer. Greater quantities could have been taken by the New Brunswick fishermen, but the latter did not prosecute the fishery diligently, remembering the poor price paid in the previous year when there was a glut in the American market.

Some 270,064 barrels of sardines were taken. This is an increase of 135,503 barrels over the 1923 catch, when 134,561 barrels were taken. As a result of the sudden drop in price from \$12 per hoghead to \$6 soon after the opening of the canning season, it was realized that something must be done to protect the fishery. The department inserted in each weir license, at the request of the weir owners, a condition that sardines for export could not be sold for less than \$10 per hoghead. This condition was at first vigorously opposed by the United States cannerymen, who buy the bulk of the fish, but the latter have changed their opinion on finding that the canning business has been stabilized thereby. A canner can now put up goods when the market is dull, knowing that his competitor is not obtaining the raw material at a cheaper price.

*Other Sea Fish.*—There were 28,265 cwts. of halibut taken, compared with 19,658 in 1923. Of this quantity Nova Scotia produced 27,407 cwts. The catch of swordfish was considerably less, only 5,575 cwts. being taken, against 14,343 the previous year. These fish were exceptionally scarce except off the Sydney Harbour fishing grounds. Those fishermen operating at the latter place had a banner year. The catch of tom cod shows a large increase, while there were fewer flounders and albacore taken, the latter showing a reduction of fifty per cent in the catch.

*Shellfish.*—The lobster fishing was not a success. This was due primarily to a scarcity of fish and also to the large carry over of the pack of 1923, when prices were low and canned lobsters could not be disposed of. One result, however, was that a greater part of the catch was shipped fresh and the carry over of the previous year's pack was disposed of.

The catch was 272,713 cwts., or a decrease of 108,915 cwts. from the previous year.

The catch and its disposal by provinces was as follows:—

	Catch	Catch marketed	
		In shell, cwts.	Canned cases.
Nova Scotia.....	115,275	34,550	40,831
New Brunswick.....	68,303	26,024	23,548
Prince Edward Island.....	65,893	6,650	26,814
Quebec.....	22,742	1,025	10,925

The pack in Nova Scotia shows a decrease of some 23,000 cases; New Brunswick, 3,000 cases; Prince Edward Island, 17,000 cases; and Quebec, 6,000 cases.

There were 27,319 barrels of oysters taken compared with 21,374 barrels in 1923.

The quantity of clams and quahaugs dug was 40,327 barrels, which is an increase of 10,753 barrels, while scallops show a decrease of 3,540 barrels with a catch of 10,350 barrels.

*River Spawning Fish.*—There were 57,561 cwts. of salmon caught, which is an increase of 12,740 cwts. New Brunswick shows an increase of 12,700 cwts. over the previous year.

An increase of 25,634 cwts. is shown in the catch of smelts, some 88,926 cwts. being taken. New Brunswick shows an increase of 20,765 cwts. and Prince Edward Island, 4,489 cwts.

Alewives show a big drop in the catch, only 31,401 cwts. being caught, a decrease of 20,423. The markets for salted alewives were very poor during the year.

#### INLAND FISHERIES

There was an increase in the catch of whitefish of 9,918 cwts., with a total landing of 167,706 cwts.

The quantity of pickerel taken was 101,610 cwts., which is a decrease of 3,485 cwts. 30,601 cwts. of blue pickerel were landed in Ontario, which is a decrease of 2,259 cwts.

The catch of herring in Ontario was 125,013 cwts., or an increase of 16,501 cwts.

The catch in the St. John River district of New Brunswick was somewhat greater.

#### PACIFIC FISHERIES

*Salmon.*—The year under review was an exceptionally good one in the salmon fishing industry. The catch was 1,965,159 cwts. and the pack amounted to 1,747,505 cases, which is the largest on record.

Of the pack that of pinks was the largest with 657,561 cases, chums second with 570,497 cases, and sockeye third with 369,601 cases. The pack of the two former varieties constitutes a record in each instance, while that of sockeye is the largest since 1915.



*Halibut.*—The catch of this species amounted to 331,382 cwts., or the second largest catch on record, that of 1923 being 334,367 cwts. It should be noted, however, that the closed season, under the International Halibut Treaty, for fishing commenced on November 15. Practically everyone interested in the conservation of the supply of halibut is expressing gratification at the establishment of the closed season for halibut fishing, which extends for three months. It is to be hoped that this closed season will have the desired effect of aiding in restoring the halibut fishery from its present depleted condition.

*Herring.*—An increased catch is reported, there being 1,157,625 cwts. taken, compared with 1,035,823 cwts. in 1923. The pack of dry salted shows a substantial increase, 853,543 cwts. being so cured. In 1923 the quantity was 744,036.

*Pilchards.*—There were 27,485 cwts. of these fish taken, compared with 19,492 cwts. in the previous year. Owing to the poor market for the canned product the pack was somewhat less.

*Whales and Seals.*—Three whaling stations were in operation during the year, two at the Queen Charlotte islands and one on the west coast of Vancouver Island. The catch was 415 compared with 455 in 1923. Of the catch 125 were fin and 100 sei.

There were 2,232 fur seals taken under the provisions of the Pelagic Sealing Treaty, by the Indians on the Pacific coast, compared with 4,424 in 1923.

#### INSPECTION OF FISH

Under authority of the Fish Inspection Act, the inspection of certain kinds of fish and the packages in which they are marketed, was carried on throughout the season of 1924. The inspection work was performed by a staff of three permanent and nine temporary inspectors on the Atlantic coast and three temporary inspectors on the Pacific coast.

The chief purposes of the Act are to require that all fish which come under its provisions shall be fit for human food, that such fish shall be packed in water-tight barrels of a standard size, that the barrels shall contain the proper weight of fish and that the fish shall be as represented by the marks placed on the barrels by the packer.

In order that the inspecting officers might more effectively deal with the inspection and sale of standard barrels, authority was obtained in 1923 to allow them to inspect all barrels intended for the use of such fish as come under the provisions of the Act at the coopers' shops. The officers acted under this authority in 1924 for the first time and the results have been gratifying both to the department and the trade. Two or three years ago, it was a somewhat difficult matter to persuade fishermen and packers generally, that their submission to the provisions of the Fish Inspection Act would result in material benefits to them. By administering the Act in a judicious and tactful way, however, the goodwill and co-operation of the trade has been secured to such an extent that to-day buyers of both barrels and fish insist on official inspection.

The following quantities were inspected during 1924:—

On the Atlantic coast, sixty thousand, nine hundred barrels of herring, mackerel and gaspereau, almost fifty thousand empty barrels, and fifty thousand boxes of smoked herring.

On the Pacific coast there were inspected two hundred and twenty thousand boxes of dry salted herring, each containing four hundred pounds.

#### INSPECTION OF CANNERIES AND CANNED FISH

The inspection of fish canneries of all kinds throughout Canada, the raw material to be used therein, the whole process of canning, the canned product and the labelling and marking of the cans was carried on under the provisions

of the Meat and Canned Foods Act. This inspection is conducted by the department's staff of fishery overseers as part of their regular duties. This inspection has for its objects:—

1. The extension of trade by improving the quality of the product.
2. The protection of the public by preventing the packing of unsound fish and insisting on the correct labelling of cans of fish.

There are between six hundred and seven hundred canneries, large and small, canning fish of various kinds on the Atlantic and Pacific coasts. Many of these canneries are small and operated by individuals without much capital. It has not been an easy task, therefore, to bring such into line with all the requirements of the Act. Notwithstanding this, however, a very marked improvement has been brought about in the last three or four years, especially by the operation of this Act, not only in the conditions under which canning operations are carried on from a sanitary point of view, but in the quality of the canned product as well. Defects in buildings and equipment, especially in lobster canneries, are being constantly remedied and improvements effected at the instigation of the inspecting officers.

#### FISHERIES INTELLIGENCE SERVICE

Under this service there was carried on during the season of 1924:—

1. The collection of monthly statistics of the sea fisheries, and the compilation of such in a summarized form for publication through the press each month.
2. The publication of a quarterly bulletin containing the statistics in detail. The bulletin is distributed to the trade and all directly concerned. The statistics are practically all collected by the regular fishery officers while performing their other duties as such and at very little additional cost.
3. The collection of information concerning supplies of bait day by day along certain stretches of the coast during the spring and summer months. The information is gathered by the officers of the department, who send it by telegram daily to certain ports where it is posted up for the information of Masters of fishing vessels and those looking for bait.

#### FISH PUBLICITY CAMPAIGN

During part of the year 1924, the advertising campaign for the purpose of increasing the consumption of fish was continued. The campaign was conducted by a committee of the Canadian Fisheries Association with the assistance of the department. It is evident from the information before the department that as a result of this work the consumption of fish throughout Canada has increased very perceptibly.

#### FISHING BOUNTY

Under the authority of "An Act to encourage the development of the Sea Fisheries and the building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the department and paid to fishermen of the Maritime Provinces. The bounty is distributed under regulations made from time to time by the Governor in Council.

For the year 1924, payment was made on the following basis:—

To owners of vessels entitled to receive bounty—\$1 per registered ton, payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty—\$8.30 each.

To owners of boats measuring not less than 13 feet keel—\$1 per boat.

To boat fishermen entitled to receive bounty—\$6.65 each.

There were 10,104 bounty claims paid. In the preceding year there were 8,915 bounty claims paid.

The total amount paid was \$159,826.40 allocated as follows:—

To 533 vessels and their crew . . . . . \$ 40,399 30

To 9,571 boats and their crew . . . . . 119,427 10



## FISHING BOUNTY EXPENDITURE FOR 1924-25

County	Boats	Men	Amount	Vessels	Tons	Av. Tons	Men	Amount	Paid
			\$ cts.					\$ cts.	
<i>Nova Scotia</i>									
Annapolis.....	165	266	1,933 90	1	60	60	15	184 50	166
Antigonish.....	138	209	1,531 65						138
Cape Breton.....	282	492	3,556 65	25	355	14	77	995 50	307
Cumberland.....	3	4	29 60						3
Digby.....	348	590	4,271 50	4	137	34	40	469 00	352
Guysboro.....	578	934	6,792 90	37	632	17	166	2,009 80	615
Halifax.....	1,062	1,415	10,476 50	63	892	14	263	3,074 90	1,125
Inverness.....	293	641	4,576 55	10	140	14	48	538 40	303
Kings.....	38	51	377 15						38
Lunenburg.....	502	619	4,621 20	114	5,667	50	1,434	17,571 30	616
Pictou.....	35	51	374 15						35
Queens.....	144	229	1,666 85	13	183	14	57	656 10	157
Richmond.....	362	633	4,573 35	20	350	17	90	1,097 00	382
Shelburne.....	498	868	6,274 95	18	439	24	147	1,659 10	516
Victoria.....	271	414	3,035 50	8	123	15	30	372 00	279
Yarmouth.....	134	299	2,123 30	9	436	48	123	1,456 90	143
Total.....	4,853	7,715	56,215 70	322	9,414	29	2,490	30,084 50	5,175
<i>New Brunswick</i>									
Charlotte.....	192	351	2,525 10	2	40	20	17	181 10	194
Gloucester.....	334	414	3,090 20	183	2,774	15	775	9,212 80	517
Kent.....	12	27	191 55	6	63	6	13	170 90	18
Northumberland.....									
Restigouche.....	3	6	42 90						3
St. John.....	20	30	219 50						20
Total.....	561	828	6,069 25	191	2,877	15	805	9,564 80	752
<i>Prince Edward Island</i>									
Kings.....	322	470	3,510 20	3	42	14	6	91 80	325
Prince.....	433	821	5,971 15	2	24	12	6	73 80	435
Queens.....	110	239	1,706 00	2	24	12	4	57 20	112
Total.....	865	1,530	11,187 35	7	90	13	16	222 80	872
<i>Quebec</i>									
Bonaventure.....	461	896	6,487 80	3	33	11	8	99 40	464
Gaspe.....	2,159	4,308	30,903 05	10	129	12	36	427 80	2,169
Matane.....	93	144	1,050 55						93
Saguenay.....	579	1,038	7,513 40						579
Total.....	3,292	6,386	45,954 80	13	162	12	44	527 20	3,305
Grand total....	9,571	16,459	119,427 10	533	12,543	24	3,355	40,399 30	10,104

## FISH CULTURE

The fish cultural operations of this department, since their inception, have been mainly in the interests of the commercial food fisheries, but in recent years game fish have received more attention to meet the greater inroads made upon them owing to the improvements of the roads and highways, the more general use of the automobile and the consequent bringing of what were previously remote districts into the reach of the general public. The distribution of speckled trout in the Maritime Provinces was during 1924 larger than in any previous year.

For the first time sturgeon, smelt and carp were propagated in small numbers. Details regarding this work are to be found in the report of the Superintendent of Fish Culture.



An apparatus of great value, whereby the determination of the dissolved oxygen content of hatchery waters is reduced to a purely mechanical operation, was perfected by the Dominion Chemist. The United States Bureau of Fisheries very generously supplied four sets of the equipment that it uses for this work, but this equipment was not found to give as accurate results as could be desired in some of our highly coloured waters. The Dominion Chemist very kindly took the matter under his consideration and perfected the apparatus above mentioned that meets these conditions.

The Canadian National, Canadian Pacific, the Dominion Atlantic and the Esquimalt and Nanaimo railways have very generously undertaken to provide free transportation for all shipments of fish eggs and fish with the attendants accompanying same. The saving effected thereby is of great importance and will leave considerable funds available to increase and expand the hatchery operations.

At the present time the department is operating thirty-two main hatcheries, seven subsidiary hatcheries, four salmon retaining ponds, and one eyeing station. The output from these establishments during 1924 was nearly nine hundred million, as shown by species in the following statement:—

STATEMENT, BY SPECIES, OF THE FISH AND FISH EGGS DISTRIBUTED DURING THE YEAR ENDED DECEMBER 31, 1924

Species	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and older fish	Total distribution
<i>Salmo salar</i> —Atlantic salmon.....	100,000	10,768,927	1,139,575	4,238,078	437	16,247,017
<i>Salmo irideus</i> —Rainbow trout.....	79,100			163,014		242,114
<i>Salmo clarkii</i> —Cutthroat trout.....	50,000	239,077	70,000	424,348		783,425
<i>Salmo rivularis</i> —Steelhead salmon.....	2,000	17,329		1,930		21,259
<i>Salmo rivularis kamloops</i> —Kamloops trout.....	738,427	75,000				813,427
<i>Salmo trutta lewensis</i> —loch leven trout.....		25,000	50,000	291,963		366,963
<i>Oncorhynchus nerka</i> —Sockeye salmon.....	25,702,500	41,081,047	8,919,495	7,299,303	7,030	83,009,375
<i>Oncorhynchus tshawytscha</i> —Spring salmon.....		60,000		590,466		650,466
<i>Oncorhynchus kennerlyi</i> —Kennerly's salmon.....	37,800					37,800
<i>Oncorhynchus kisutch</i> —Coho salmon.....	246,000	1,553,186				1,799,186
<i>Oncorhynchus gorbuscha</i> —Pink salmon.....		135,000				135,000
<i>Oncorhynchus keta</i> —Chum salmon.....				2,166		2,166
<i>Salvelinus fontinalis</i> —Speckled trout.....	290,000	1,125,221	343,000	1,223,016	153	2,981,390
<i>Coregonus clupeaformis</i> —Whitefish.....		587,517,050				587,517,050
<i>Cristivomer namaycush</i> —Salmon trout.....	20,000	21,273,633	3,600,000	999,943		25,893,576
<i>Argyrosomus arcti</i> —Cisco.....		6,388,000				6,388,000
<i>Stizostedion vitreum</i> —Pickarel.....		160,625,000				160,625,000
<i>Micropterus dolomieu</i> —Black bass.....				1,037		1,037
<i>Cyprinus carpio</i> —carp.....		4,999,200				4,999,200
<i>Acipenser rubicundus</i> —sturgeon.....		8,000				8,000
	27,265,827	835,890,670	14,122,070	15,235,264	7,620	892,521,451

## NORTH AMERICAN COMMITTEE ON FISHERIES INVESTIGATIONS

This committee, on which are represented, in addition to Canada, the United States, Newfoundland, and France, held two meetings during the year 1924, the first in May and the second in November. Information was interchanged and common plans formulated so that the various investigations in international waters might be co-ordinated toward a common goal. These plans involved a number of separate investigations. The general study of conditions in the sea has been in two directions. In the first place arrangements have been made for the regular taking of ocean temperatures at definite points. In this way a selected series of data will be available for the water, somewhat comparable to those that have been for so many years obtained for the air. The importance of the temperatures for the fisheries is very great, as they not only to a considerable extent determine where the various fishes are to be found at any given time, but also frequently determine success or failure in breeding according as they are suitable or unsuitable for the helpless eggs and fry. The circulation of the waters along the coast and in the vicinity of the off-shore fishing banks has been under investigation for several years with very striking results. Specially designed drift bottles with drags have been put off in many hundreds, and for Canada during the year these have covered the interesting regions from Nova Scotia to the Grand Banks. Although moved to and fro in a complicated fashion under the influence of tide, wind and other forces, the water finally makes or circulates in a very definite fashion, which is determined by the configuration of the bottom, even when over fifty fathoms deep. This regularity makes it possible, with certain limitations, to predict where the water will go. As there are great variations in the waters of the region, it will be apparent how important the circulation is in determining the character of the water on any fishing bank at any given time.

Hardly less important is the improvement in the character of the data on the fisheries. From the scientific standpoint, fishery statistics, if properly obtained, would be of a very great value in giving evidence as to any exhaustion in the stock of any given commercial fish. In this way it would be possible to apply remedial measures at an early stage. Not only is the committee making efforts towards the collection of statistics on the fisheries of the international waters, but it is also planning to have the statistics of catches supplemented by periodical special examinations of sample catches by experts. The current statistics are being intensively studied in order to demonstrate at once any peculiarities they may show in the behaviour of the fishes in the various regions, and to have any conclusions therefrom critically tested out in the future collection of statistics.

The movements of the migratory fishes have been and will continue to be matters of international importance. Through the committee the tagging of codfish has already been arranged for and begun. Plans have also been made for the tagging of mackerel. The necessity for further knowledge concerning the habits and life-needs of the important commercial fishes of outer waters has led the committee to arrange co-operative studies of the cod, the haddock, and the mackerel. The study of the halibut is provided for by a special International Fisheries Commission.

## WORK OF BIOLOGICAL STATIONS IN CANADA

ATLANTIC BIOLOGICAL STATION, ST. ANDREWS, NEW BRUNSWICK

The Station was opened June 2, and closed September 15.

*Investigators*

The following is a list of the investigators who were at the station during the season, the subjects upon which they were engaged, and the duration of their stays:—

Mr. H. M. Allan, University of Toronto; June 10 to June 20: Preparation for taking part in warm water survey.

Mr. W. M. Anderson, University of Toronto; hydrographic assistant; June 11 to September 26.

Miss Helen Battle, University of Western Ontario; June 13 to August 26: Abnormal development of fish ova and larvæ.

Mr. H. H. Bell, Dalhousie University; June 12 to June 19: Preparation for taking part in warm water survey.

Dr. C. C. Benson, University of Toronto; August 25 to September 13: Rigor mortis of fish.

Mr. A. F. Chiasson, University of St. Francis Xavier's College; June 10 to June 19: Preparation for taking part in warm water survey.

Dr. Philip Cox, University of New Brunswick; July 7 to August 14: Life-history of the mackerel.

Dr. C. J. Connolly, University of St. Francis Xavier's College; July 18 to August 16: Coloration of fishes, and study of decapod larvæ.

Miss Viola M. Davidson, Toronto, Ont.; June 26 to August 26: Culture of diatoms.

Mr. G. Lyman Duff, University of Toronto; June 5 to August 4: Life-history of the cod.

Prof. J. N. Gowanloch, Dalhousie University; June 9 to September 11: The physiology of the embryonic fish heart, and life-history of the whelk.

Mr. F. Ronald Hayes, Dalhousie University; June 10 to September 4: The life-history of the periwinkles.

Miss R. N. Hearn, University of Toronto; August 20 to September 20: Technical assistant for thermometry in refrigeration.

Dr. A. G. Huntsman, Director; June 4 to June 22, July 5 to August 2, August 16 to October 21: Supervision.

Dr. F. S. Jackson, McGill University; July 7 to August 31: Histology of the pancreas and the pituitary body of fishes.

Mr. W. G. Jones, University of New Brunswick; June 11 to June 19: Preparation for taking part in warm water survey.

Prof. A. B. Klugh, Queen's University; June 5 to September 12: Culture of entomostraca, and measurement of light in aquatic habitats.

Prof. A. P. Knight, Chairman; June 16 to June 20, July 23 to September 7: Supervision.

Dr. A. H. Leim, Ichthyologist; June 4 to October 28: Assisting in supervision; light effects on copepods.

Miss M. M. Lenz, Queen's University; June 13 to August 13: Early stages of fish decomposition.

Dr. J. F. Logan, McGill University; biochemical assistant; June 17 to August 18: The proteins of fish muscle.

Mr. J. R. Martin, Queen's University; June 11 to August 8: The effect of light on marine organisms.

Mr. L. R. Markley, Ottawa, Ont.; June 24 to August 22: The food relations of copepods.



Prof. J. J. R. Macleod, University of Toronto; June 27 to August 2, August 14 to September 15: Further investigations on insulin and related bodies in fishes.

Mr. J. W. MacLeod, McGill University; August 24 to September 1: Experiments with *Gammarus locusta*.

Mr. C. M. McCallum, University of Western Ontario; June 9 to July 11: Preparation for mackerel investigation.

Mr. N. A. McCormick, University of Toronto; July 1 to August 31: The occurrence of insulin in marine animals.

Mr. R. H. M'Gonigle, University of Toronto; June 9 to July 12: Preparation for pile borers investigation.

Mr. A. W. H. Needler, University of Toronto; statistical assistant; June 4 to August 17.

Miss H. M. Perry, Macdonald College; August 6 to September 27: The bacteriology of refrigerated fish.

Professor E. E. Prince, Secretary-Treasurer; August 26 to September 7.

Dr. G. B. Reed, Queen's University; June 18 to July 4: Early stages in the bacteriology and chemistry of fish decomposition.

Mr. W. C. M. Scott, University of Toronto; May 29 to July 11: Development of the eggs and larvæ of the winter flounder.

Mr. R. G. Sinclair, Queen's University; June 5 to August 31: A chemical study of the early stages of the decomposition of fish.

### General Investigations

The weekly and monthly collections of plankton and hydrographic material at established points in Passamaquoddy bay and vicinity and daily records of the temperature of air and water at St. Andrews have been continued.

### Field Investigations

A general survey was made of portions of the Atlantic coast to determine the extent of the warm water suitable for the breeding of lobsters. The following areas were investigated:—

*Chaleur*.—From Shippigan to Charlo, N.B., by Mr. W. G. Jones.

*Halifax*.—From Dartmouth to Jeddore Harbour, N.S., by Mr. A. F. Chiasson.

*Lunenburg*.—From Boutilier to Port Medway, N.S., by Mr. H. H. Bell.

*Shelburne*.—From Shelburne to Argyle, N.S., by Mr. H. M. Allan.

*Sheet Harbour*.—From Halifax to Canso, by the *Prince*.

Under a grant from the Research Council, Mr. R. H. M'Gonigle continued work on the pile borers. With Grand Narrows, C.B., as headquarters, a study was made of the physical factors determining the distribution and abundance of *Teredo*, and in the early fall a special survey was made around Cape Breton island and along the Nova Scotia coast toward Halifax, to determine the distribution of the pile borers on that part of the coast.

Mr. H. C. White, of Queen's University, continued his study of the results of planting trout fry in streams, investigating certain streams in Ontario where fry had been planted.

Mr. C. M. McCallum investigated the life-history of the mackerel, carrying through experiments on the eggs at Shippigan, N.B., and following up the fall fishery with the aid of the *Prince* in the Cape Breton region.

The study of the current by means of drift bottles, in which the countries represented on the North American Committee on Sea Fisheries Investigations co-operate, was continued.

During the season 1,526 bottles were put out on twelve different lines.

The United States Coast Guard cutter *Tampa* put out 500 bottles on three different sections, as follows:—

A. Across Sable island bank, 50 miles.....	100 bottles
B. Across the continental shelf, southeast of Sable island, 50 miles.....	100 "
C. Across the continental shelf, at the middle of the southern boundary of the Grand Bank, 75 miles.....	300 "

The *Prince* put out 1,026 on nine sections, as follows:—

1. Guion Island, C.B., S. by E. 30 miles.....	120 bottles
2. Cranberry Island Bell buoy, N.S., S.S.E., 35 miles.....	140 "
3. Country Island light buoy, N.S., south 25 miles.....	100 "
4. Beaver Island light, south 30 miles.....	120 "
5. Port Hood, C.B., to Cape George, 15 miles.....	60 "
6. Caribou Point light to Wood island, 11 miles.....	66 "
7. Souris, P.E.I., to Mabou, 35 miles.....	140 "
8. Cranberry I. bell buoy, S.S.E., 35 miles (August 1).....	140 "
9. Cranberry I. bell buoy, S.S.E., 35 miles (September 1).....	140 "

1,026

Up to October 1, 245 of these cards had been returned.

#### PACIFIC BIOLOGICAL STATION, NANAIMO, B.C.

Investigators during the summer of 1924:—

Mr. C. J. Berkeley, Nanaimo: Carbohydrate constituents insulin like hormones in kelp.

Mrs. C. J. Berkeley, Nanaimo: Systematic and distributional study of polychaet worms.

Mr. L. L. Bolton, University of B.C.: Microscopic anatomy of the digestive tracts of dogfish, herring, sockeye, salmon, etc.

Dr. W. A. Clemens, Pacific Biological Station: Studies of the rates of growth of fish.

Professor J. B. Collip, University of Alberta: Sugar metabolism in various species of fish, crabs and molluscs.

Mr. Ira A. Cornwall, William Head; Systematic and distributional study of barnacles.

Mr. A. R. Fee, University of B.C.: Parasitic Crustacea infesting fish; systematic and distributional study of Isopoda.

Mr. C. R. Elsey, Point Grey High School: Study of the introduced Japanese oyster.

Dr. R. T. Foerster, Cultus Lake: Life-history of the sockeye salmon in fresh-water.

Professor C. H. O'Donoghue, University of Manitoba: Systematic and ecological studies of nudibranchs, holothurians and Bryozoa.

Mrs. C. H. O'Donoghue, Winnipeg: Systematic study of Bryozoa and the development of Membranipora.

Professor J. Tait, McGill University: Mechanism of movement of the operculum of the barnacle, *Balanus nubilis*.

Mr. G. H. Wailes, Vancouver (approximately eight months): Marine and fresh water Protozoa and Algae.

Mr. G. V. Wilby, University of British Columbia: Life-history, rate of growth, etc., of the ling cod.

The following members of the British Association for the Advancement of Science from Great Britain visited the Station in August: Professor and Mrs. F. W. Gamble, Professor and Mrs. Tattersall, Professor W. J. Dakin, Professor D'Arcy Thompson, Dr. T. W. Shann, Dr. Cl. H. Monro, Miss F. A. Randell and Miss M. D. Dixie.

## TECHNICAL CLASSES FOR FISHERY OFFICERS

Under the direction of the chairman of the board a course of instruction in the physical and chemical properties of "fire, air, earth and water," and in some of the principles of biological sciences including bacteriology, was given at the Agriculture College, Truro, N.S., to twenty-one fishery officers of New Brunswick and Nova Scotia.

The course lasted two weeks, opening on January 21 and closing February 3, 1925. Three of the teachers of the college took part in the work of instruction, viz., Professors Barteaux, Harlow and Cunningham. Dr. Cumming, the Principal, generously placed the class rooms, apparatus and other equipment at the disposal of these teachers, so that the instruction was throughout demonstrative and practical.

Dr. Knight's course of instruction dealt with the conditions under which fish live, and the interrelationships of their food supply.

## NATURAL HISTORY OBSERVATIONS

During the summer and fall of 1924, the department's naturalist, Mr. A. Halkett, made observations of the quahaug and scallop on the coasts of the Maritime Provinces in regard to their spawning time and certain particulars concerning their structure and habits.

The observations of the quahaug were made on that part of the coast of Northumberland strait which extends almost from the extreme of Buctouche bay to Shediac bay, embracing these bays and Cocagne bay, during the period from the 30th May to the 4th of August. His conclusions, based upon these observations, are that the actual time when the quahaug spawns is during the latter part of the month of July, and that any spawning before or after that time for any practical purpose is negligible.

His examination of the sex elements of the scallop made at Mahone bay, N.S., and coasts of Gloucester county, N.B., indicated that there is little, if any, essential difference in the spawning time of the scallop of the two localities, and that, as taken together, there is a more or less corresponding gradation in development from non-ripe eggs and milt to a spent condition of the gonads. In this respect past observations of the scallop at Mahone bay are taken into reckoning. That is to say, he had previously determined that the spawning time of the scallop at that bay is during the month of September, and that there the gonads were not thoroughly emptied of their contents until that month was drawing to a close.

I regret to report that the following number of fishermen lost their lives while prosecuting the fisheries during the year: thirty on the Atlantic coast and nine on the Pacific coast.

I am, sir, Your obedient servant,

A. JOHNSTON,

*Deputy Minister of Marine and Fisheries.*



## APPENDIX I

## REPORTS OF INSPECTORS OF FISHERIES

REPORT OF WARD FISHER, CHIEF INSPECTOR OF THE PROVINCE  
OF NOVA SCOTIA, FOR 1924

The prospects at the opening of the year were excellent. The markets for fresh, smoked, pickled and dried fish were in a healthy condition, the demand was good and prices buoyant. The only fly in the ointment was the hazardous position of the canned lobster trade, as the markets had not absorbed the packs of the two preceding years, resulting in a carryover of some 60,000 cases, much of which had to be disposed of at a loss to prevent danger of a collapse of the whole industry, particularly in the event of a large pack for 1924. As a consequence of these conditions the canners' prices to the fishermen were reduced about one-third the usual rates.

This fishery during the whole year was the most unsatisfactory ever experienced. The catch and pack was less than two-thirds normal. The returns to the fishermen, due to greatly reduced catch, 115,275 cwts., as compared with 172,720 cwts., for 1923, and also due to the smaller prices paid by the canners, hardly paid operating expenses in many districts. The canned trade, however, was greatly benefited. The total pack was only 40,831 cases, as compared with 63,971 for the preceding year. This reduction in the pack, together with a reduction of over 25,000 cases for Prince Edward Island, New Brunswick, and the Magdalens, made possible the absorption of a large portion of the carry-over. It may, therefore, be confidently expected that the lobster fishing and canning industry for 1925 will be in a healthy condition, affording profitable employment for the fishermen, and adequate returns to the canners.

The fresh and smoked fish trade continued to be satisfactory so far as the markets were concerned. The demand during the winter and early spring months was greater than the supply. This may be accounted for as follows:—

1. *Quality*.—Improved conditions with respect to handling, processing and marketing have been noteworthy. The dealers are quite alive to the possibilities of increased markets that invariably follow quality goods attractively packaged.

2. *Advertising*.—Better and more consistent advertising has had much to do with increasing the demand for seafoods. In this respect the industry has been greatly benefited by the widely published opinions of expert dietitians and medical authorities, which has afforded valuable assistance in the advertising campaigns conducted during the year.

3. The decrease in the number of persons engaged in the primary occupation of catching the fish. The decrease has continued with the demand. The number of persons engaged in the industry has decreased by about 10,000 since 1914, chiefly in the primary operation of catching and landing the fish. This decrease has been consistent gradually for the ten year period, and is due to extraordinary causes. For instance about 4,000 were lost during the war period. Many abandoned their calling during the years of greatest depression at the close of the war. A further falling-off was noted after the adoption of the American tariff increasing the duties on fresh and pickled fish. Evidence of this decrease in the number of bona fide deep-sea fishermen is seen in the lessened number qualified to receive fishing bounties. In 1914 bounties were paid to 15,361 fishermen. Last year the claims paid had decreased to about 10,000.

To meet any great additional increase in the demands for sea food, there is prime need of either a very considerable increase in the number of fishermen, or the adoption or extension of methods whereby the catches may be largely increased by labour-saving operations. The prosecution of the deep-sea fisheries by the use of small row, sail and motor boats, must pass. Every encouragement should, therefore, be given to better methods, appliances and outfits.

Increased production, particularly from the period from November 1 to May 1, is essential. Excellent opportunities for the development of ports advantageously located are open to enterprising young men of moderate capital. What has been accomplished at Lockeport, for instance, can be duplicated at a number of well located centres, such as Liverpool, Yarmouth, Digby and the Ingonish district.

The dried fish trade was unusually profitable to the producers. The total of all varieties was 276,012 cwts., as compared with 247,620 cwts. for 1923. The Lunenburg fleet had an unusually prosperous year, landing 170,000 quintals, having a total value of over one and a half million dollars. The prices were the highest since 1918, sales being made at \$10.60 per quintal.

The conditions which brought about a reduction of 50 per cent in the number of vessels comprising the Lunenburg fleet, continued. It is quite possible, however, that the coming year will see an addition of some ten sail, as the prosperity of the past year has encouraged those interested in the industry. This is evidenced by the activity of the ship-yards, which have been kept busy on orders for new vessels.

The pickled fish trade was also much better than usual. The herring catch was 267,413 cwts., an increase of over 100,000 cwts., as compared with 1923. The quantity pickled was 23,216 barrels, an increase of over 13,000 barrels.

The mackerel catch was 114,662 cwts., an increase of over one-third as compared with 1923. The quantity pickled was 17,387 barrels, an increase of over 7,000 barrels.

The markets for good quality pickled herring and mackerel were excellent. Much yet remains to be done to encourage the industry. Owing to poor facilities, and poorer methods, many of the fishermen disposed of their catches fresh at a mere fraction of the value of the pickled article.

The total landings of all kinds of fish was 220,630,500 pounds, as compared with 195,439,100 pounds, for 1923, or an increase of over 24,000,000 pounds.

The landed value of the catch was \$6,269,485, as compared with \$5,779,049 for 1923. The total marketed value was \$8,777,251, as compared with \$8,448,385, or an increase of \$328,866.

It should be noted, as intimated above, that the decrease in the lobster catch was nearly 6,000,000 pounds, and the decrease in the marketed value of the catch was over \$1,000,000. This decrease was unparalleled in the industry. Under normal conditions, the marketed value of the fisheries of the province for 1924 would have been nearly \$10,000,000. It is particularly gratifying that notwithstanding the decrease in the lobster catch the total landings of the fisheries was 24,000,000 pounds greater than in 1923.

The following detailed reports by districts of the more important fisheries, will be of interest:—

#### DISTRICT No. 1, CAPE BRETON ISLAND—Inspector McLeod.

##### THE LOBSTER FISHERY

The catch of lobsters was 28,538 cwt., with landed value, \$191,112, and marketed value \$384,787 as compared with a catch of 46,732 cwt., with landed value \$449,819, and a marketed value of \$730,981, showing a decrease of 18,194 cwt., in the catch, \$258,707 in the value to fishermen, and \$346,194 in the marketed value, compared with 1923.



The large decrease in the catch is due altogether to scarcity, as there were 8,307 more traps operated, and the weather favourable. Fair catches were made at Isle Madame, Richmond county. On the Inverness coast, particularly from Mabou to Hawkesbury, the catch landed was so small that several of the canneries closed before the end of the season. This fishery has been most disappointing, not alone to the fishermen, but to the trade generally. The following shows the catch and pack, with values, by counties, as compared with 1923.—

1924

	Catch		Pack	
	cwt.	\$	cases	\$
Inverness.....	8,675	54,129	4,338	115,934
Victoria.....	5,471	34,912	2,723	92,141
Cape Breton.....	10,295	72,959	4,997	135,368
Richmond.....	4,097	29,112	1,188	28,695
	28,538	191,112	13,246	372,138

1923

Inverness.....	17,366	185,307	8,092	249,766
Victoria.....	8,300	73,731	3,657	139,042
Cape Breton.....	14,602	126,435	7,031	223,234
Richmond.....	6,464	64,346	2,563	76,187
	46,732	449,819	21,343	688,229

In addition to the above there were 315 cases of tomalley packed in 1924, valued at \$3,562.

*Cod*.—The catch of cod was 106,220 cwt., having a marketed value of \$277,726, compared with 89,071 cwt., with a marketed value of \$246,790 for 1923.

This branch of the industry is entirely neglected during the spring months, as the fishermen devote their time to the lobster fishery, which is usually much more remunerative.

The waters of Cape Breton island teem with cod of the choicest quality, and the fishermen should be encouraged to prosecute the cod fishery with greater vigour. Further they need to be induced to handle the catches with greater care, in order to successfully compete with similar product from other counties.

*Haddock*.—The catch of haddock, 61,435 cwt., with a marketed value of \$164,819, compared with 58,059 cwt., and marketed value of \$194,117, for the preceding year, showing an increase in the catch of 3,376 cwt., and a decrease in the marketed value \$29,298.

The increase in the catch is due to two additional trawlers operating from Port Hawkesbury. For some unaccountable reason, the run of haddock did not remain as late as usual in the spring on that portion of the coast from Ingonish to Neil's harbour. Large catches were landed at these ports in the month of December. At Petit de Grat, also, the catch during the fall months was most satisfactory.

*Mackerel*.—The catch of mackerel was 22,600 cwt., with a marketed value of \$134,800, compared with 18,717 cwt., having a value of \$76,989 marketed for 1923, showing increases of 3,883 in the catch, and \$57,963 in marketed value.

The boisterous weather that prevailed on the northern coast of Inverness in October and November seriously interfered with fishing operations from



Margaree harbour to Pleasant bay, as the fishermen could not reach the fishing grounds for many days during this period when fish of largest size and choicest quality was abundant in these waters.

It is most encouraging to note that the fall mackerel caught on the Inverness county coast are much sought after and secure the highest prices. This year New York markets quoted Inverness pickled at \$10 per barrel more than the best Norwegian or American.

*Swordfish.*—The catch was 4,698 cwt., marketed value, \$83,218 compared with 9,364 cwt., and marketed value \$98,639 for 1923. Decreases of 4,666 cwt., in the catch and \$15,421 in marketed value.

These fish were unusually scarce, with the exception of the fishing grounds off Sydney harbour. The North Sydney fishermen had a banner season, landing 1,046 cwt., compared with 141 cwt., for 1923. The fish were large in size, some weighing 700 pounds. The whole catch was shipped to Boston where it sold for about 30 cents per pound. The catch at Louisburg shows a falling off of 3,531 cwt., compared with the preceding year.

*Herring.*—The catch was 36,895 cwt., and marketed value \$69,857, compared with 30,007 cwt., and marketed value \$48,733 for 1923. Increases of 6,888 cwts., and \$21,124 in the marketed value being shown.

Spring herring struck in very plentifully in Sydney and St. Ann's harbours, during the month of May, and the catch would have been very much larger had not the drift ice appeared, preventing the bankers from entering the harbours for bait, and making it necessary to liberate large quantities of herring from the trap-nets.

All along the the southern coast of this island, from isle Madame to Scatarie, herring of the choicest quality appeared in large numbers during the month of July but owing to the low prices offered, and the prevalence of dog fish, many of the fishermen gave but little attention to this branch of the industry.

*Halibut.*—The catch was 2,338 cwt., and marketed value \$36,665, compared with 3,540 cwts., and marketed value \$50,464, for 1923, showing a decrease of 1,202 cwt., and \$13,799 marketed value.

*Oysters.*—The catch was 1,369 barrels and marketed value \$8,806, compared with 2,136 barrels, and marketed value \$12,147, for 1923, showing decreases of 767 barrels in the catch, and \$3,341 in the marketed value.

At Orangedale, Inverness County, the catch has fallen off 666 barrels, compared with 1923. and at Little narrows, Victoria county, the catch decreased 104 barrels, due to high winds and early frost interfering with operations.

*Pollock.*—The catch was 3,508 cwt., marketed value \$6,173, as compared with 1,898 cwt., and marketed value \$4,252 for 1923, showing an increase of 1,610 cwt. in the catch, and an increase of \$1,921 in the marketed value. At L'Ardoise, where these fish were very numerous, the catch shows an increase of 1,140 cwt. The largest landing was at Port Hawkesbury, the quantity being 1,543 cwt.

It may be of interest to note that in 1753 under French rule the value of the Cape Breton fisheries was \$676,289. The total production reached 98,450 quintals of fish, and 1,154 barrels of oil. Louisburg was the principal fishing station, but vessels also operated out of other ports. For the year under review, this island yielded only 117 barrels of cod oil and 8 barrels of whale oil. The inspector writes:—

"Consumption of fish is increasing very slowly, and the hope is, that by more publicity and enlightenment on the value of fish as a health food, and the desirability of encouraging its consumption the fisheries may be made much more valuable than they are at present. However, though the fishing industry may advertise on a costly and extensive

scale, and do all in its power to stimulate the interest of the public in this direction one thing is certain, and that is, that, unless much greater care is taken in the handling and preserving of their product to make it more appetizing they cannot expect anything more than a temporary increase in the demand.

"It is again my happy privilege to draw your attention to the most satisfactory services rendered by the overseers of fisheries, and I can assure you that the protection and perpetuation of our fisheries are at all times the first consideration of our loyal and competent officers."

### DISTRICT No. 2, EASTERN MAINLAND—Inspector Sutherland

As pointed out in a previous report, there are two classes of fishermen in this district, viz: farmer-fishermen and fishermen proper. The former live along the Northumberland straits and are chiefly interested in the lobster fishery. The latter, who depend entirely on the fisheries for their livelihood, live along the eastern shore, or on the coast of Halifax, and Guysboro counties. On the Bay of Fundy portion of this district, farmer-fishermen are also found, but the fisheries of these waters are not so extensive, and fishing is not one of the principal occupations.

During the 1923 seasons, the operations of the farmer-fishermen were most satisfactory, as lobster fishing was very successful. The fishermen proper, however, did not generally share in the prosperity, as the prices for ground fish were low, and there was not a ready demand for their products.

The result of the 1924 operations shows a reversal of these conditions, with a decrease of \$336,852 in the landed value and of \$414,793 in the marketed value of lobster fishery, and large increases in the values of cod and mackerel. The outstanding feature of the year's operations was the failure of the lobster fishery with greatly reduced prices to the fishermen. This, of course, was chiefly felt along the Northumberland straits.

### THE LOBSTER FISHERY

The catch of lobsters was 36,883 cwt., with a marketed value of \$525,764, as compared with 60,348 cwt., with a marketed value of \$978,133, for 1923.

The outstanding feature of the fishing operations for the year was the large decrease in the quantities and value of lobsters both to the fishermen and the packer.

The catch was 23,465 cwt. less than for 1923 with a decrease of \$452,339 in the marketed value. The decrease was general but the canning districts along the Northumberland straits suffered more heavily as they depend almost entirely on the lobster fishery.

In Halifax county west very few fishermen engaged in fishing during the spring season, and only 84 cwt. were landed. In the December season, however, 600 fishermen were engaged with approximately 30,000 traps. This season was fairly successful with satisfactory prices. All the catch of 560 cwt. was shipped fresh, valued at \$16,800 to the fishermen. In the eastern part of the county where there is only a spring season with no size limit, the catch decreased 1,589 cwt. The lobster fishery in this county is in a critical condition and some remedial steps should be taken at once if it is to be saved.

In Guysborough county the catch and pack both show considerable decreases but the quantity shipped in shell is slightly greater than for 1923 and of greater value. Owing to rough weather and late ice conditions, fishing did not generally begin for two weeks after the season opened.

In Antigonish county the first traps were set on May 8, about two weeks after the opening of the season, and packing did not become general until May 15. After that date ideal weather prevailed. The catch shows a decrease of 4,543 cwt. and there were 1,942 less cases packed than for 1923. Average price paid to fishermen \$8.50, compared with \$10.50 for 1923.



In Pictou county ice and weather conditions delayed the season at least two weeks, and the results of the season's operations show a decrease in the catch of 9,273 cwt., and in the pack of 4,771 cases. The loss in marketed value in this county alone was \$183,381, a direct loss to the fishermen of \$121,387 in landed value. During the year about 650 cwt. of lobsters were shipped in shell from this county, which formerly was purely a canning district.

In Colchester and Cumberland counties similar conditions to those in Pictou county and Antigonish existed, with decreased catches, and operations retarded by ice and weather conditions during the Spring season. The fall season in Cumberland county west—the catch was 1,251 cwt., valued at \$12,510, compared with 1,360 cwt., valued at \$13,636 in 1923 and the pack 395 cases, compared with 586 cases. Fresh shipments show a slight increase. The following shows the catch and pack, with values, by counties, as compared with 1923:—

1924

	Catch		Pack	
	cwts.	\$	cases	\$
Halifax.....	3,112	46,456	591	15,180
Guysboro.....	7,272	72,420	1,912	50,665
Antigonish.....	6,413	46,789	3,531	92,535
Pictou.....	12,302	95,982	6,379	158,328
Colchester.....	680	4,760	340	8,860
Cumberland.....	7,104	51,874	3,293	83,560
	36,883	318,281	16,046	409,128

1923

Halifax.....	5,892	84,244	1,321	43,667
Guysboro.....	9,717	103,068	3,280	102,850
Antigonish.....	10,956	117,844	5,473	171,690
Pictou.....	21,575	217,369	11,150	337,135
Colchester.....	918	11,018	458	13,740
Cumberland.....	11,290	120,996	5,493	165,477
	60,348	654,539	27,175	834,599

In addition to the above there were 303 cases of tomally packed in 1924, valued at \$2,717.

The season closing on June 25 along the Northumberland straits was extended until July 5, but proved to be of very little value to the industry. Only 784 cwt. were landed and 251 cases packed, 130 fishermen and 13 canneries engaged.

*Cod.*—The catch was 259,284 cwt., valued at \$548,657, as compared with 178,932 cwt., valued at \$308,019, for 1923. An increase of 80,352 cwt., in the catch and \$240,638 in value. Of the total catch 126,761 cwt., was taken off shore by vessels and steam trawlers, three of the latter landing at Halifax, and two at Canso, and accounting for the bulk of the catch. The marketed value of the catch was \$781,046. Prices for dried cod were very satisfactory during the latter part of the year, fishermen received as high as \$10.50 per quintal. Average prices were: dried, \$8; smoked fillets, \$12; boneless, \$10.

*Haddock.*—The catch was 142,087 cwts., valued at \$286,548, as compared with 159,359 cwts., valued at \$286,390 for 1923. A decrease of 17,272 cwts., but a slight increase of \$158, due to better prices. The smaller catch was due to decreased landings in Halifax county west and Guysboro county east, and to bad weather during January and February when the smaller boats were unable



to operate profitably. The marketed value of Haddock was \$449,079 a considerable increase over the previous year. The quantity taken off-shore was 106,915 cwts., by vessels and steam trawlers. Average market prices for haddock were: smoked, \$8; smoked fillets, \$11; dried, \$7.

*Pollock*.—The catch was 27,707 cwts., valued at \$37,174, as compared with 15,822 cwts., valued at \$18,775. An increase of 11,885 cwts., and \$18,399 in value. Of the catch 11,478 cwts. was taken off-shore. The increase is due to heavier catches in Halifax county west where the inshore fishing was better than for some years.

*Halibut*.—The catch was 14,377 cwts., valued at \$164,677, as compared with 6,885 cwts., valued at \$84,663 for 1923. An increase of 7,492 cwts., and \$80,014 in value, due to the catches of a halibut trawler being operated by the National Fish Company, of Halifax. The marketed value of halibut was \$231,-859 in 1924 and \$117,559 in 1923.

*Herring*.—The catch was 83,948 cwts., valued at \$78,096, as compared with 70,527 cwts., valued at \$53,519 for 1923. An increase of 13,421 cwts., and \$24,577 in value, due to larger catches in Antigonish, Guysboro counties and Halifax county west. The catch in Cumberland county, where only spring herring are taken, fell off 7,448 cwts. This catch is all smoked or used for lobster bait. The figures for Halifax county west, where the catch increased 3,191 cwts., does not signify the run of herring. Much larger quantities could have been taken if there was any certainty as to price. The fishermen have not yet recovered from the scare of 1922, when pickled herring sold for \$3 and \$3.50 per barrel. The marketed value of the catch was \$161,028 in 1924 and \$123,549 in 1923.

*Mackerel*.—The catch was 61,126 cwts., valued at \$189,566, as compared with 34,628 cwts., valued at \$89,093, for 1923. An increase of 26,498 cwts. and \$100,473 in value, due almost entirely to heavier catches in Halifax county west where both spring and autumn runs were good. The Spring fish were practically all small mediums, and did not command good price owing to heavy catches by American purse seiners. At times during the Spring, fish buyers would not handle any fresh fish, as the price was too low on the Boston market to clear a profit. These conditions forced the fishermen to salt their catches, which brought about \$9 per barrel. The price during the autumn run was somewhat better, but a number of fishermen salted their catches which brought satisfactory returns—\$16 per barrel. The marketed value of the total mackerel catch for this district was \$376,188 in 1924 and \$179,088 in 1923.

*Albacore*.—The albacore catch decreased 1,258 cwt., but this is no indication of the run. In St. Margaret's bay where these fish are taken the actual catch there was the largest ever made, but owing to extremely low prices on the American market, the fish were released.

*Swordfish*.—The swordfish catch also decreased considerably, only 696 cwt., being taken, compared with 4,961 cwt, for 1923. The decrease in value being \$29,200, incidentally the largest decrease of any fish for the year with the exception of the lobster. The marketed value was \$9,417 in 1924 and \$56,165 in 1923.

*Shad*.—The shad fishing in the Bay of Fundy shows a decrease in catch of 121 cwt.

The total landed value of the catches was \$1,807,481, as compared with \$1,694,408 for 1923. The total marketed value was \$2,865,281, as compared with \$2,924,128 for 1923. This shows an increase in the landed value of \$113,073, but a decrease in the marketed value of \$58,847, which is accounted for by the decrease of \$452,369 in the marketed value of lobsters.

The marketed value of the catch is shown by counties, as compared with 1923, as follows:—

	1924	1923
	\$	\$
Halifax.....	1,401,254	1,053,509
Guysboro.....	887,008	1,008,589
Antigonish.....	164,886	223,730
Pictou.....	211,400	385,226
Colchester.....	25,441	24,474
Cumberland.....	164,217	222,135
Hants.....	11,075	6,465
	2,865,281	2,924,128

The above bears out the statements made in the introduction, the big lobster-producing counties all show a decrease, while Halifax, where general fishing is carried on, shows a substantial increase.

The total catch for 1924 was 661,680 cwt., compared with 560,751 cwt. for 1923, or an increase of 100,929 cwt., due chiefly to larger catches of cod, mackerel, pollock and halibut.

Thirty-two convictions were secured against violation of the Fisheries Act, and a large quantity of illegal gear confiscated, among which was fifty-two salmon nets.

### DISTRICT No. 3, WESTERN MAINLAND—Inspector Marshall

#### THE LOBSTER FISHERY

The lobster catch shows a considerable decrease, as compared with the previous year, both in the quantity taken and the value of same. The catch was 49,854 cwt., valued at \$857,704, as compared with 65,640 cwt., valued at \$1,134,829, for 1923. The catch and pack, with values, by counties, as compared with 1923, is as follows:—

1924

	Catch		Pack	
	cwt.	\$	cases	\$
Lunenburg.....	1,224	19,107	161	4,43
Queens.....	2,727	43,004		
Shelburne.....	15,785	259,683	3,655	98,130
Yarmouth.....	23,591	380,503	7,007	192,640
Digby.....	5,658	130,142	716	18,797
Annapolis.....	695	18,305		
Kings.....	174	6,960		
	49,854	857,704	11,539	314,003

1923

Lunenburg.....	1,552	20,084	261	7,976
Queens.....	2,000	25,369	466	13,995
Shelburne.....	16,242	298,891	3,864	130,823
Yarmouth.....	32,340	520,539	8,266	273,891
Digby.....	12,003	231,571	2,596	90,992
Annapolis.....	1,358	34,750		
Kings.....	145	3,625		
	65,640	1,134,829	15,453	517,677

There were approximately 1,500 men less engaged in this fishery in 1924 than there were in 1922, and about 800 less than there were in 1920. There were also 100,000 less traps used in 1924 than in 1920, and without doubt this would account in a large measure for a certain amount of the decrease in the catch.

*Cod.*—The total catch of cod was 764,769 cwt., valued at \$2,002,313, as compared with 780,940 cwt., valued at \$1,368,555, for 1923, which shows an increase in value of \$633,758 over the previous year, and is entirely accounted for by the price received by the fishermen.

*Haddock.*—The total catch of haddock was 117,282 cwt., valued at \$218,046, as compared with 79,605 cwt., valued at \$144,752, for 1923, showing an increase in value of \$73,294.

*Hake and Cusk.*—The total catch of hake and cusk shows a marked increase over the previous year. The catch was 107,001 cwt., valued at \$99,305, as compared with 49,651 cwt., valued at \$45,842, for 1923, showing an increase of \$53,463.

*Pollock.*—The catch of pollock for the district was 15,181 cwt., valued at \$17,979, as compared with 24,688 cwt., valued at \$22,538, for 1923, showing a decrease in value of \$4,559. There has been a decrease in the catch and value of this fish each year for the past several years.

*Halibut.*—The catch of halibut was 10,692 cwt., valued at \$138,877, as compared with 8,772 cwt., valued at \$128,806, for 1923, showing an increase in value of \$10,071.

*Herring.*—The catch of herring was 146,570 cwt., valued at \$163,821, as compared with 65,352 cwt., valued at \$70,513, for 1923, showing an increase in value of \$93,308.

*Mackerel.*—The catch in mackerel shows an increase in quantity and value over the previous year. The catch was 30,936 cwt., valued at \$152,851, as compared with 25,839 cwt., valued at \$107,764, for 1923, showing an increase in value of \$45,087.

*Scallops.*—The catch of scallops was 7,504 barrels, valued at \$45,920, as compared with 11,839 barrels, valued at \$68,337, for 1923, showing a decrease in value of \$22,417. This is accounted for in a measure by there being fewer men engaged in this business as I find there were 298 licenses sold in 1923 while only 218 were issued in 1924. The weather conditions also had a marked effect on the operations of this fishery, as we had a considerable amount of windy weather during the greater part of last winter.

The total catch for the district for 1924 was 1,264,001 cwt., with a value of \$3,775,793, as compared with 1,128,462 cwt., valued at \$3,189,963, for 1923, showing an increase of \$585,830. This increase is largely accounted for by the increased price received by the fishermen over the previous year, and while no more men or vessels were engaged in the operations off-shore, those that did engage in it received fair remuneration for the year's service, so that when the operations on the whole are taken into consideration there has been a considerable improvement in the district over the previous year.

There were thirty-five confiscations and twenty-three prosecutions with nine sales of confiscated articles.

There has been one new cold storage plant constructed in the district during the last year, at Yarmouth, and is now in operation, valued at \$80,000. This plant should be of great benefit particularly to the herring and mackerel fishermen.

There have been a number of vessels constructed during the last year, but up to the present time it is impossible to advise whether these vessels are to go into the fish trade or into the coasting business.



## THE SALMON AND INLAND FISHERIES

As both the commercial and domestic salmon fisheries depend on the success of the parent fish in reaching the spawning areas of the inland waters, the available statistics of the catches may be given under the same caption. It should be noted that the terms "Commercial" and "Domestic" differ with respect to the mode under which the fish are captured. The "Commercial" applies to fish taken by nets or traps in the coastal waters and in the tidal waters of rivers where netting is permitted. The "Domestic" refers to angling with rod and line.

*Cape Breton Island.*—The commercial catch was 3,561 cwts., landed value \$43,365, marketed value \$58,036, compared with 3,935 cwts., landed value \$49,265 and \$63,386 marketed value, for 1923, showing decreases of 374 cwts. in the catch, \$5,900 in the landed value and \$5,350 in the marketed value.

These fish were unusually abundant from Inlet to Nyanza, Victoria county. The catch in nets set along this part of the district was most satisfactory. It should also be noted that the catch of salmon in cod trap-nets from Ingonish to Neil's harbour has greatly diminished the past two years, though no change has been noticed in the catch of the ordinary salmon trap-net.

The conditions with respect to angling were not as favourable for sport fishing as 1923. The extraordinary drought from the middle of June until the latter part of August lowered the waters in the rivers and lakes, resulting in conditions not conducive to successful angling. While salmon in large quantities ascended the Margaree river up to the 15th of June, many remained in the lower pools where they showed little inclination to rise to the fly. However, from the 1st to the 15th of June, and after the freshets that occurred the latter part of August until the close of the season, the sportsmen made very satisfactory catches.

The catch with the fly, in the Margaree, was 699, compared with 1,066 for the previous year. It must be remembered that the conditions existing throughout the entire season in 1923 were ideal, as occasional rains kept the river fairly high, and the water cool and not too clear. Under similar conditions the catch this year would have been equally good. The few fly fishermen who visited Little river, Cheticamp, had a good season, their catch being 131 salmon.

Four fish were caught with the fly at North river, St. Ann's, and seven in Middle river. These were evidently produced from fry taken from an early run of salmon in the St. John river and planted in Middle and Baddeck rivers a few years ago, as previous to 1923 no salmon were ever captured with the fly in Middle river.

*Eastern Mainland District.*—The commercial salmon fishery shows a slight increase of 291 cwts. over 1923. The catch was 5,400 cwts., the highest since 1913 when 5,600 cwts. were taken. Substantial increases are noted for Pictou, Antigonish and Guysboro counties and the Bay of Fundy waters, but there was a decrease of 1,247 cwts. in Halifax county west owing to the failure of the Prospect fishery.

The anglers had excellent sport fishing the past year. The run in the St. Mary's river, Guysboro county, was the greatest on record. The numerous streams and lakes of Guysboro county, and Halifax county provide unexcelled opportunities for the sportsman and tourist. It is most difficult to obtain even approximately the amount of the catches but the popularity of these waters is evidenced by the increasing numbers of fishermen each year. The principal salmon streams to which there is access receive proper attention from the hatchery superintendents each year, and a number of the best trout lakes are also systematically stocked. The distribution of fry had been greatly improved in this district during the past year and further improvements are looked for.

Experience has shown that there is a great destruction of young salmon each year by the "small boy" innocently angling for trout in the smaller brooks and streams, and I think that a little education in the schools would overcome this practice. Very few boys will wilfully destroy salmon in the parr or smolt stage, but being unable to distinguish between salmon of these ages, and small trout a great many of the former are innocently destroyed. I would suggest that posters showing coloured cuts of salmon smolt and trout, and explaining how they can be distinguished, one from the other, be distributed to the schools, with instructions how to properly liberate salmon, or undersized trout. I may add that the popular impression is that there are two kinds of brook trout, one known as "salmon trout," which is really the small salmon, and the other as ordinary trout.

It may be mentioned that about 200 salmon were tagged in river Philip, Cumberland county, during November for the purpose of ascertaining whether the run in that river comes from the east or west, and also to obtain more information of the movements of these fish after they leave fresh water.

During fall months the usual difficulties were experienced in endeavouring to provide protection to spawn salmon in the rivers along the Northumberland straits. The matter has been previously reported on different occasions and I regret to state that the situation is not improving. The spawning runs in the various rivers are increasing each year, and poaching is therefore more difficult to prevent.

The inspector writes:—

"I cannot speak too highly of the work of the overseers in endeavouring to cope with these conditions but in the rivers west of Pictou, especially where no legal coastal fishery is established, it is impossible to educate the public to a point where they will be sympathetic to protective work. The general feeling prevails that the residents on the river banks have a right to a share of the fall run regardless of the fact that the season is closed and that salmon are in the rivers only for the purpose of propagation. Conditions on river Philip are probably worse in this respect than any other river in Nova Scotia, and it requires the utmost efforts of the officers, day and night, to suppress commercial poaching. As I previously brought to the department's notice, it is my firm belief that a valuable coastal salmon trap-net and drift-net fishing could be developed all along the Northumberland straits, if the spawning fish received efficient protection for a short number of years, and a systematic stocking programme was carried out."

*Western Mainland District.*—The catch shows a decrease, particularly in the coastal waters, being only 1,166 cwts., with a value of \$29,885, as compared with 2,173 cwts., valued at \$50,270, for 1923. The greater portions were taken by trap-nets and gill-nets.

It is confidently expected that the improved fishways on the Mersey river, Queens county, and also the completion of similar improvements on rivers in Yarmouth and Annapolis counties, together with a systematic continuance of restocking the streams with salmon and trout fry, will greatly assist in the development of the fishery of this district.

The development of the tourist business has awakened a lively interest in the sport fishing facilities of the province, as it is quite evident that angling is one of the best attractions that can be held out to visitors. Nor should it be forgotten that the province furnishes a larger proportion of resident anglers than can be found in any other section of the country. Therefore the work of the Fish Culture Branch of the department in restocking the streams has a most important bearing on the development of a very lucrative tourist business. The physical improvement of the stream, and the protection of the water, should also be a matter of price consideration.

A correct report of the trout catch is much more impossible than that of salmon, as trout fishing abounds in hundreds of streams and lakes, visited by many thousands of anglers. The reported catch for Cape Breton island was 95 cwts., landed value \$1,171, marketed value \$1,249, as compared with 22



cwts., with a landed value of \$320, and marketed value \$490, for 1923; showing an increase of 73 cwts. in the catch, \$851 in the landed value, and \$759 in the marketed value. These fish entered Trout river, lake Ainslie, the first week in July and continued very plentiful until the end of the season. In July, 1,705 were taken with hook and line, in August 4,540 and in September 1,018, making a total of 7,263. Fine catches of magnificent trout were made at river Dennis and Indian river, Whycocomagh, Inverness county, Middle river, Baddeck river, Clyburn's and Warren's brooks. Ingonish and Salmon river, cape North, Victoria county. Largest catch at Trout river, lake Ainslie.

In the Eastern Mainland district the reported catch was 16,800 pounds, as compared with 14,100 for 1923. Large catches were also taken in the Western district, which included the well-known sporting districts of the Mersey river and tributaries, Kejimikujik, lake Rossignol, Jordan river, Tusket river and Bear river.

#### UTILIZING OF FISH WASTE

The successful utilization of the vast quantities of fish waste has been a problem of increasing vexation, and large expenditures have been made in the establishment of plants for the reduction of fish waste and waste fish into commercial fertilizers or other products, but without the financial success necessary for the continuance of the establishments, as the operations usually included not only an expensive plant but also the employment of a steam vessel or motor craft for the collection of waste from a quite extensive shore area. The expense involved in collecting a sufficient supply to keep a large plant in continuous operation precluded any possibility of financial success.

It is quite probable, however, that the difficulties in connection with such establishments will be solved by the plant now being established at McKenzie's wharf, Halifax, by Mr. C. W. Kendall, who has had much experience in similar plants at Grimsby and other large fishing ports in England, where the process he is introducing in Halifax has been used with great success.

The Halifax plant is of moderate cost, and can be operated at comparatively little expense. The supply of waste to be provided by the National Fish Company, will be sufficient for preliminary operations. It is the intention to begin operations with a two-unit process, and to continue adding units until the capacity is sufficient to care for all the waste in the Halifax district, which will include the waste from the landings of the trawlers of the National Fish Company, the Leonard Fish Company, and also the landings of large quantities of waste that has hitherto been thrown overboard while the trawlers are at sea.

In addition to the manufacture of a fine grade of fish meal Mr. Kendall utilizes the cod livers for oil, which he purposes refining, and also utilizes the oil from the waste fish.

A market is ready in England, Germany, Japan and China. The German market is now open for three thousand tons, and the product can be placed in the English markets in successful competition with the English product.

It is the intention of Mr. Kendall to establish a similar plant at Port Hawkesbury during the present year, and he also contemplates plants at other fishing centres.

The process used is odorless, in so far as the manufacture of the meal is concerned, and it is proposed to manufacture the oil so as to avoid any offensive odors.

It takes about five tons of waste to manufacture one ton of meal. Mr. Kendall expects that ultimately he will manufacture about fifty tons of meal each week. The meal is highly prized as a poultry and cattle food, for which at present there is little market in Canada.



## FISHERIES PROTECTION SERVICE

The *Arras* continued the work of the previous year with the Grand Banks fishing fleet. The following is a report from Captain Barkhouse, covering this phase of her services:—

Dr. Stanley Harcott Peppard was appointed to the service on June 26 this year, and joined the *Arras* at Halifax the following day. On June 29 the ship left port and proceeded towards the Grand Banks, arriving at Cape Broyle on July 3. Part of the Lunenburg and LaHave fleets were then at that port seeking bait.

On July 4 we left with the above mentioned vessels for the Grand Bank and located the remainder of the fleet 25 miles southeast of Virgin rocks. From then until the end of the season we kept in constant touch with the vessels, both in port and on the banks, and gave medical aid to eighty-five fishermen and in various other ways gave the fleet information of value to the work, such as where to obtain bait, weather reports, etc.

The fishing season on the Grand Bank having ended September 2, we left there on that date and went to the St. Pierre Bank. Finding the fleet working west we kept in company with it and arrived at Sydney on September 6. On the 9th, went to Middle Grand Bank and remained there until the 13th, when we returned to Halifax.

This year the Lunenburg and LaHave fleets consisted of fifty-eight vessels, comprising a total crew of approximately 1,175 men. The average catch was 1,500 quintals. Operations commenced earlier than former years, this being due to the fact that squid for baiting struck in on July 10, and the first baiting was taken on that date. But contrary to former years no squid were available on the banks, a condition that was unknown for a number of years. This required that the vessels go to port for every baiting and much time was lost on this behalf. Fishermen of long experience stated that this was the first season they could recall that no squid were taken on the fishing grounds.

Another unusual feature this year was that the fish were scattered all over the bank and no large catches were made in any one particular place. This was probably due to the absence of any polar current, there being no icebergs whatever observed this year.

The French fishing fleet was scattered, part working on the Grand Bank whilst the remainder confined operations to the St. Pierre Bank. The French beam trawlers evidently have learned to respect the presence of the *Arras* on the ground, observing that their operations this year were apparently carried out on legitimate lines and we did not have one complaint, which is quite a contrast to former years.

I have heard many expressions of approval of the Department's policy of providing medical aid for the fishermen.

I must again draw your attention to the unfitness of the *Arras* for the work. As pointed out in my report last year, a larger ship with modern facilities is a necessity. Medical aid should be continued and enlarged and to do this a vessel with hospital accommodation should be provided. A ship capable of handling at least four cot cases appears to be an absolute necessity. This year we had three severe cases that had to be taken to St. John's for hospital treatment. One patient eventually died and perhaps his life may have been saved had he been able to get hospital care when his ailment was first discovered. The doctor did admirable work this year but much more is possible with enlarged accommodation. This, sir, is a matter that is respectfully submitted for your earnest consideration.

As the work of the *Arleux* was of a most valuable character, the following from the report of Captain Cousins will be of interest:—

July 20. Captain Milne taken ill and entered hospital at Lunenburg. H. P. Cousins, 1st officer, taking charge of *Arleux*.

July 21. Proceeded to take up work of locating new scallop beds and illegal fishing in vicinity of Mahone bay and Chester basin. Located scallop bed east of Little Duck island. Proceeded westward towards Bay of Fundy looking after illegal fishing and locating new scallop beds.

August 20. Located new scallop bed 6 miles N.N.W. of Lurcher shoal.

August 22. Located new scallop bed 8 miles west of Brier island. This bed covers a large area and gave good results and no doubt runs from Lurcher shoal to west of Brier island, continuing up the Bay of Fundy to Digby. It is the intention of some of the fishermen at Yarmouth and Westport of fitting out boats and operating these scallop grounds next season. The boats at Digby this season did well scallop fishing off Digby gut and Centreville outside of three-mile limit.

September 6. Proceeded to Louisburg to watch the American sword fishermen. The local Cape Breton fleet was not as large this year as previous years, and the catch of swordfish much smaller than last year. Remained with the sword fishing fleet until September 17 when the last American sword fisherman left the coast. Ship then proceeded to Kent county, N.B. Northumberland straits, to look after illegal lobster fishing, destroying a large number of lobster traps and gear. By keeping in close touch with this district, illegal fishing was discontinued in a short time. A great deal of illegal lobster fishing is carried on in this district and a large number of illegal lobsters are smuggled to factories operating in other districts where the open season is on. The *Arleux* remained in this district until October 15, then ship returned to western coast of Nova Scotia watching American mackerel netters and illegal fishing until December 6, when ship proceeded to Canso to protect the Canso fishing fleet during the winter haddock fishing season, breaking ice in the St. Peters canal and locks, and releasing and assisting vessels through ice.

During the month of December, the weather was rough. Fishermen reported fairly good fishing when weather permitted.

December 16. At 12.50 p.m. received message that a fishing craft from Petite de Grat was drifting to sea in the strong northwest gale. The *Arleux* at once proceeded to sea in search of fishing craft. 2.30 p.m. passed tow line to fishing craft *J. C. Martin*, disabled, with sails blown away and engine out of commission. Lost one dory and a large quantity of fishing gear. Short of provisions with eight men on board. 3 p.m. proceeded with fishing craft in tow. 6.40 p.m. arrived at Petite de Grat harbour. Motor boat came alongside and towed fishing craft in inner harbour.

December 17. Proceeded to protect the fishing fleet at Canso.

December 30. Proceeded to St. Peters canal to break ice and release vessels.

December 31. Released schooners *Vandella* and *Eva May*, coal laden. Towed schooners to Canso.

January 4. Proceeded to St. Peters canal to break ice in locks, and canal, and release vessels.

January 5. Released schooner *Janie F*, coal laden, in a leaking condition. Towed schooner through locks to west end of canal. 6.30 p.m. schooner reported in a sinking condition. Ship's company rendered assistance to schooner by pumping and taking part cargo of coal out to lighten schooner and save her from sinking.

January 6. Proceeded to protect fishing fleet off Canso. Towed in fishing boat with engine trouble.

January 8. Proceeded westward towards Sheet harbour.



January 9. Proceeded from Sheet harbour with schooner *Edith F. S.* in tow for Guysboro.

January 11. Arrived at Guysboro with schooner in tow and proceeded to Canso with fishing fleet.

January 15. Fishing boats at Canso laying up for the winter. Fish moving westward. Canso harbour full of drift ice. Ship lying at Canso waiting orders.

January 17. Proceeded, cruising westward towards Halifax.

January 20. Arrived at Halifax. Proceeded westward towards LaHave. 1 p.m., breaking ice in LaHave river and releasing vessels *Donald 2nd* and *Norma L. Conrad*.

January 21. Breaking ice in LaHave river. Released schooners *Aubrey Brown*, *W. H. Murray* and *Dawn*.

January 22. Proceeded towards Lunenburg to break ice and release vessels. 3 p.m. breaking ice in Lunenburg harbour and releasing vessels.

January 24. Moored ship at Railway wharf, Lunenburg for refit.

#### PATROL BOAT "MILDRED MCCOLL"

This boat was in commission from April 17, 1924, to January 17, 1925, and covered the coast from Lunenburg to Mulgrave during the spring months. Reference has previously been made to the work of this boat during the fall lobster season in Cumberland county. Later she proceeded again to the eastern shore, patrolling the coast, particularly Halifax county west, during the December lobster fishing season until she was laid up. Captain Williams is a most reliable officer, and under his direction the boat accomplished most effective work during the year, especially in Cumberland county.

#### PATROL BOAT "A"

This boat has given good satisfaction, keeping up fairly steady patrol between Pubnico and cape Blomidon. The services of this boat should be continued throughout the year, as her work is of great benefit to the lobster fishery in preventing illegal fishing along the shores, particularly as no fishery guardians are employed on any part of the coast of this district.

#### REPORT OF INSPECTOR J. F. CALDER, DISTRICT No. 1, PROVINCE OF NEW BRUNSWICK, FOR 1924

This district comprises the counties of Charlotte, St. John, Albert, and the Bay of Fundy watershed of Westmorland county.

The value of the fisheries of this district during the present year was about twenty per cent greater than that of the previous year. The marketed values of the catch for the present year is as follows: Charlotte county, \$1,687,958; St. John county, \$334,387; Bay of Fundy watershed of Westmorland county and Albert county, \$8,266, making a total of \$2,030,611, against \$1,663,681 for 1923.

#### COD

An average catch of cod was made during the year, the yield amounting to 29,134 cwts., which was a considerable improvement over 1923, but below the catch for 1922. There was a good demand for cured cod fish at fair prices during the season.

#### HADDOCK

Fourteen thousand, eight hundred, and ninety-two cwts. of haddock were taken this year, which is nearly three times the quantity that was taken during the previous year. Haddock fishing was better than it has been for twenty years past.



## HAKE

About an average catch of hake was made during the season; 49,356 cwts. were taken against 17,912 cwts. for 1923, while the catch for 1922 was 85,503 cwts. There was a fair demand for hake during the summer months, but the catch was quite light.

## POLLOCK

The pollock fishery was practically a failure, only 8,391 cwts. being taken against 28,841 cwts. for the previous year. The scarcity of pollock was general along the whole Atlantic seaboard.

## HERRING

The herring catch was fairly satisfactory, and the smoked herring business was very good. A fair pack was put up at Grand Manan and are being sold at a good price. The "sale for export" condition which was placed in the herring weir licenses during the season, was very helpful to our smoked herring industry. Heretofore, large quantities of herring suitable for smoking purposes were sold fresh to the packers at Lubec and Eastport, Maine. As they would not pay the price required by the "sale for export" clause in the licenses, our fishermen were compelled to smoke their catches themselves. The result has been that our people have received twice as much out of the fishery as they would have by selling the fish fresh, as they had done in the past. I may add that the value of our smoked herring product amounted to \$109,852.

## SARDINES

A good average catch of sardine herring was made during the season; 269,643 barrels were taken, against 134,494 barrels for 1923, which was an exceptionally poor season, and 223,353 barrels for 1922. The sardine canners began operations on April 15, with all of them paying a price of \$12 per hogshead at the weirs. They continued to pay this price until the latter part of May, when they arbitrarily put the price to \$6 per hogshead over night. Realizing their inability to successfully cope with the situation, the licensees appealed to the department for assistance in dealing with the combination of packers. A meeting of the licensees was held at St. Andrews early in June. The Premier of New Brunswick, Hon. P. J. Veniot, was present, on the invitation of the fishermen. Mr. J. J. Cowie, and I represented the department. A resolution was unanimously passed, setting forth the material facts in connection with the situation, and requesting the department to prohibit the exportation of herring from the weirs unless \$10 per hogshead at least had been paid for the same. The department readily consented to insert such a condition in the herring weir licenses. The condition became operative on June 12. From that date until the factories closed up, about the middle of October, over 42,000 hogsheads of herring were exported from the weirs. The difference in the amount obtained by the fishermen from the price they received, as a result of the "sale for export" condition, and the price that was being paid up to June 12, is nearly \$170,000; as a matter of fact, I believe that the fishermen have gained a great deal more than \$170,000 by this regulation, for if it had not been adopted, there is no question but that the price would have fallen to a much lower figure than \$6 per hogshead. I am pleased to add that the sardine canners, who were bitterly opposed to this condition at first, are now in favour of it, as it has helped to stabilize the canning business. A canner can now go ahead and put up goods when the market is dull and hold them for future sale without running the risk of a competitor stepping in and getting a cheaper supply of raw material.

## SALMON

There is little to note in connection with the salmon fishery during the present year, as the catch was about an average one; 2,793 cwts. were taken with a marketed value of \$50,499.

## CLAMS

A large increase is to be noted in the quantity of clams taken as compared with the previous year; 23,907 barrels were taken this year, against 13,057 barrels for 1923.

## SHAD

The spring run of shad was very much better than during the two previous years. Yielding to the earnest solicitation of the Lorneville fishermen, a fall shad fishing season was granted, but was unproductive of result, as the fall run failed to put in appearance. However, that is very unusual. I feel sure that the fall fishing season is going to be very beneficial to the fishermen, without being at all injurious to the fishery, as whatever fish are taken will be those that spawn earlier in the season.

## ALEWIVES

Fifteen thousand cwts. of alewives were taken in St. John county during the year, with a marketed value, of \$31,939. The foreign market for salt alewives is in bad shape, with the result that this fishery is being conducted without profit.

## LOBSTERS

A considerable improvement is to be noticed in the lobster catch as compared with the previous year. The catch this year amounted to 6,022 cwts., against 5,813 cwts. for the previous year. The marketed value of the lobster catch was \$173,969.

I am pleased to report that things are looking somewhat brighter in the fishing industry than they have since the close of the war. The fishermen have gone through a very trying period, with the result that a considerable number have abandoned the industry. The great drawback has been a lack of markets rather than supplies of fish. Market conditions improved very much during the present year, and the earnings of the fishermen were considerably more than during any one of the past few years. Grand Manan Island did exceptionally well. Owing to the failure of the pollock fishery, the line fishermen of Campobello and Deer island did very little, while the weir fishery in that section did very well. The "sale for export" condition in the herring weir licenses is very much appreciated by the weir fishermen, and it ought to produce even better results during the coming year than it did during the present year. The fishermen are confidently looking for a return of prosperity in their industry and, there are many signs pointing in that direction.

REPORT OF INSPECTOR A. L. BARRY, DISTRICT NO. 2, NEW  
BRUNSWICK, FOR 1924

This district covers that part of New Brunswick bordering on the bay Chaleur, gulf of St. Lawrence and Northumberland strait, and including counties Restigouche, Gloucester, Northumberland, Kent and strait side of Westmoreland county.

The total marketed value of the fisheries for 1924 was \$3,319,500, as against \$2,850,641 in 1923, an increase of \$468,859. This is a considerable increase and is accounted for mainly by the increased values of salmon and smelt. The fisheries of this district are varied and in some cases, notably that of cod, salmon,

smelt, lobsters and oysters, are very valuable. The following table is interesting as showing the comparison between the catch and value of 1924 to that of the preceding year:—

Kind of Fish	1924		1923	
	Quantity caught	Value marketed	Quantity caught	Value marketed
		\$		\$
Cod..... cwt.	230,032	571,376	264,970	536,004
Herring..... "	217,052	200,522	214,926	201,576
Mackerel..... "	13,845	49,166	13,455	54,054
Alewives..... "	5,630	6,891	17,435	20,552
Bass..... "	868	11,520	545	6,109
Salmon..... "	30,274	362,901	17,669	194,143
Smelts..... "	63,748	841,414	43,062	580,723
Lobsters..... "	62,281	1,029,595	67,875	1,106,486
Haddock..... "	1,746	3,798	1,741	3,643
Hake and cusk..... "	7,622	14,816	4,652	8,810
Trout..... "	179	2,360	126	1,642
Eels..... "	221	2,050	233	1,783
Tom cod..... "	13,375	50,209	10,873	31,587
Clams and quahaugs..... bbl.	9,537	40,678	9,888	28,864
Oysters..... "	17,201	103,040	14,574	67,123
Shad..... cwt.	3,224	28,287	1,594	5,861

## COD

The increase in the value of the cod fishing may be accounted for by the fact that there was exceptionally favourable weather during the whole of the fishing season. The fishing boats were in operation practically every fishing day during the open season.

## HERRING

There is a notable decrease in the value of this fishery although the catch nearly equals that of the year 1923. On the whole the herring fishing was good but on account of the poor market no great effort was made to catch them, and in some cases the fishermen emptied their nets and let the fish go.

## MACKEREL

The catch of mackerel was about the same as that of the previous year with an increase in value. These fish were very plentiful but as the market was so poor the preceding year and a number of fishermen had occasioned loss, no great effort was put forth in this direction.

## BASS

There is a slight increase in the catch and considerable increase in the value of this fishery during the early part of 1924 but the fishery seems to be a total failure in December of that year. This is probably accounted for by the fact that the extreme low water had caused the fish to ascend the rivers far above the normal fishing grounds in order to meet the fresh water.

## SALMON

This is one of the chief fisheries of the district particularly in the Miramichi bay and rivers. The catch was nearly double with a proportionate increase in value. In spite of this fact there seems to be no decrease in the run of these fish but rather the contrary. All along the coast the streams were literally choked with the fall run of salmon ascending to spawn which promises good future conditions in this line of industry. One of the hardest problems the



officers have to contend with is the protection of these fish ascending the streams after the close of the season, as on account of the low water and the large quantities of fish it is very easy for poachers to set an illegal trap in the narrow parts of the streams and take immense quantities in one night.

#### SMELTS

This splendid fish, along with the lobster, occupies the premier place among the fisheries of this district. There was a considerable increase in both the catch and value over the preceding year, but the opening of the season in December has been a great disappointment. The number of fish has not decreased so greatly but the size is so far below normal that as a result the market value is cut nearly one half. It is hoped that the latter part of the fishing season (January and February, 1925) will show an improvement. There was a great increase in the number of nets set for this fishing in December but so far most of the fishermen have occasioned only a loss.

#### LOBSTERS

There was a slight decrease in both the catch and value of the lobster fishery from the preceding year, but the industry still keeps a high level. The number of canneries operating decreased from 177 to 142, but there was a considerable increase in the live lobster industry, which promises to take a more important position year by year. Great improvements have been made in the method of canning of lobsters as also in the methods of shipping them alive. It would seem, however, that the live lobster trade will provide greater protection for these shell-fish than can be obtained by canning, as only lobsters of a certain size are required for shipping alive, whereas the canning factories will accept very small fish.

#### TOM COD

A slight increase is noted in the catch of this fish with a corresponding increase in value.

#### CLAMS AND QUAHAUGS

The catch is practically the same as for 1923 with a slight decrease in value. The quahaug fishing industry has been improved by the erection of a cannery at Shediac. Previously these fish were shipped in shell to the United States and as the greater part of the weight of the fish consists of shell the high freight threw somewhat of a damper on the marketing of this fish. With the starting of local canning a great improvement is expected in this line in future.

#### OYSTERS

There was considerable increase both in catch and value over the preceding year. The oysters taken from the leased areas commanded a particularly high price and are coming more in demand every year on account of their superior quality. As a result some of the fishermen who operate on the public beds are beginning to appreciate the fact that it is better to work for a high standard of quality rather than for quantity production alone.

#### SHAD

The catch and value of shad were more than double over that of 1923.

#### SCALLOPS

Although the department has gone to considerable expense in locating the scallop bed areas along this coast, and some particularly good beds were found off Gloucester county, no great stride has yet been made toward catching this

shell-fish due probably to the fact that the fishermen are not familiar with the methods of fishing. Some inquiries have been received from scallop fishermen in Nova Scotia as to the facilities for marketing these shell-fish from this district and it is hoped that this line of the fisheries will be given more attention in future.

Greater attention seems to be given by the fishermen to the observation of the Fishery Act. The number of prosecutions dropped from 93 in 1923 to 42 in 1924, and the number of confiscations from 142 to 97. The prosecutions were as follows: Illegal fishing, 27; fishing with small mesh, 8; canning lobsters in close season, 2; other violations, 5.

For the protection of the salmon in the Miramichi river (we have over two hundred miles of water open and settled on both sides) a new system of patrolling was instituted in the appointing of what may be called a flying patrol, consisting of two special guardians, who spend their whole time on the river carrying with them their cooking and camping outfit and sleeping on the river bank at night. They cover the districts of all the guardians and work in co-operation with them. This has proved very satisfactory in preventing the taking of large quantities of salmon by means of illegal contrivances of all sorts.

In spite of the fact that there are numerous saw mills on practically all the streams in this district there were no prosecutions for pollution of streams with sawdust or otherwise, and it is worthy of note that this part of the Fishery Regulations is being appreciated and observed.

One matter which will require considerable attention is the destruction by seals at the mouths of the rivers. These marauders prowl about during the early summer and play havoc with the salmon, breaking into and destroying nets, and mutilating the salmon so that they are unfit for market. Suggestions for their destruction are now before the department and it is hoped that some effective method will be found whereby they may be greatly reduced in number if not entirely exterminated.

There was considerable loss to the fishermen in a heavy storm of October 1st in which many lobster traps as well as some small boats were torn away and destroyed. Also running ice in December occasioned a loss of thirty-six smelt nets in the Miramichi district alone; the latter coming on top of a poor smelt fishing year has occasioned considerable hardship. In this hazardous employment only one life was lost during the year.

#### REPORT OF INSPECTOR H. E. HARRISON, DISTRICT No. 3, NEW BRUNSWICK, FOR 1924

District No. 3 comprises the counties of King's, Queen's, Sunbury, York, Carleton, Victoria and Madawaska.

The early season, or winter, fishing was not of sufficient importance to require observations. The covering of ice in some of the rivers and streams began to show signs of decay early in April, and towards the last of the month there was considerable open water in places, and, on the 26th of that month the first fresh alewives, taken in the Oromocto river, near Fredericton, were put on the market here. On the 7th of May the St. John river was all clear of ice and the spring freshet was at its highest point of the season. Very little rain fell for several weeks in this part of the province, but the waters were held at a fair height because of snow gradually melting at the heads of the several rivers, but, by the latter part of June the larger rivers were at a low level, and continued that way until the first of September.



## ALEWIVES

Year	Cwt.	Value
1923.....	875	\$ 2,188
1924.....	668	1,669

It will be observed that while 207 cwt. less alewives were taken in 1924 than during the previous year the value was greater. The smaller value in 1923 was because of the inability of the fishermen to find a market for 153 barrels of salted fish. The lack of a considerable market for salted alewives, taken in the inland waters, is evidently having an effect. Three of the officers reported an excellent run of large fish during the spring. Lack of favourable packing and marketing conditions in the inland district ought to benefit the St. John harbour fishermen, in that their catches ought to be greater within a reasonable period.

## BASS

Year	Cwt.	Value
1923.....	17	\$ 255
1924.....	17	255

The sea, or striped, bass fishery was of little value during the present year, in fact, it has been in that condition for some years.

## MULLETS

Year	Cwt.	Value
1923.....	8	\$ 32
1924.....	120	360

A considerable trade was done in the mullet fishery during the summer of the present year. While 800 pounds were marketed in 1923, the weight mounted to 12,000 pounds during the present year.

There are many streams in my district containing large numbers of this fish, therefore, besides ridding the waters of this more or less nuisance it is possible for the fishermen to make a few dollars.

The catch is practically all shipped to the United States markets, although the Jewish population of the towns and cities of this province consume a percentage of the catch. More or less are always taken in the alewife and pickerel nets, but these are generally thrown away as of no value.

## PICKEREL

Year	Cwt.	Value
1923.....	1,635	\$ 16,350
1924.....	775	7,750

The decrease in the quantity of pickerel taken, compared with 1923, is very marked, but, to a less extent than the increase in 1923 over 1922. In 1923 there was close to 700 per cent increase over the 1922 catch. It may be that pickerel were fished too hard last year. I am inclined to think that local conditions had much to do with it. In 1923 water conditions appeared to be favourable, whereas, the spring freshet of 1924 was not so high, which may have had something to do with it, and the water remained low, and more or less stagnant during the whole of the summer, and the nets do not take so many fish when the waters are dead low. I saw a few of the largest pickerel in the Fredericton market last summer I have ever seen. They were taken in the Oromocto River, and weighed about two pounds each.

## SALMON

Year	Cwt.	Value
1923.....	355	\$ 8,165
1924.....	496	12,400



There was a fairly substantial increase in the amount of salmon taken, being 141 cwts. better than in 1923, and 72 cwts. better than in 1922. A considerable portion of the increase is due to the extended period of two weeks' fishing allowed in the tidal water of the St. John river, and, more particularly to the last week of those two. Practically the whole of the Kings county catch is taken in the St. John river, and the whole of the catch in York county is taken in the St. John. During the first of the two weeks extension I visited some of the salmon fishermen in Kings county and I was told that they had taken about as many salmon that week as they had during the whole of the season previously, but a large per cent of them were grilse, or small salmon (called "fiddlers" in that district), while the catch in York county was much the best of the season during the last of the two weeks' extension, and the fish in the latter case were large, most of them from twelve to twenty pounds each. The extension did not apply to the non-tidal water of the St. John river, consequently, all net fishing ceased beyond the head of tide on the fifteenth of August.

## SHAD

Year	Cwt.	Value
1923.....	792	\$ 4,752
1924.....	1,503	9,018

It is with very great pleasure that I am able to make my report regarding the shad fishery for the present year. The comeback of well up to 100 per cent over the catch of 1923 is very satisfactory, and even shows a betterment of the 1922 figures by 279 cwts. I am not prepared to advance any specific reason for this condition, but I hope that it is at least partly due to sane regulations well enforced. It may be that more shad escaped the nets in St. John harbour, and reached the St. John river and its tributaries, however. I understand that the catch in the harbour was also very satisfactory. It would be within the mark, I think, to say that the Kennebecasis and Washademoak waters produce quite 65 per cent to 70 per cent of the shad taken in this district, and the quantity taken in the non-tidal water of the St. John would not, I think, be more than two or three per cent of the whole. Shad fishing was exceedingly good in the Victoria sub-district this season. Shad are so late in reaching that water (near the Grand falls of the St. John river) that the few men who fish there do not have more than one week's fishing, and, sometimes not more than three nights, before the season closes—June 20.

## STURGEON

Year	Cwt.	Value
1923.....	100	\$ 2,000
1924.....	66	1,650

This fishery fell off considerably from last year—a fraction more than 33 per cent. Those following it laid the cause to the continued low water of the St. John river, and continued heavy winds. I do not know that that is the actual reason, but, these men are experienced fishermen and, in a way close observers. Many of the sturgeon taken were of good size, which is indicated by the amount of caviar produced, as little, or no caviar, is taken from the smaller sturgeon. The quantity of caviar this year is 164 pounds, as compared with 121 pounds in 1923. Both fish and caviar are shipped to dealers in New York, but the fishermen often complain that they do not, or think that they do not, get a square deal. Reports come back that the shipment was not in good condition, or it was delayed in transit, or some such report, and fishermen have to accept such, and take what is sent them in return for fish and caviar.

## EELS

Year	Cwt.	Value
1923.....	Nil	Nil
1924.....	70	\$3 50

In former years, when eels were taken in this district it was from the waters of the lower tributaries of the St. John river, but this year eels were being taken, and in goodly quantities, in the Meductic (or Eel) river. Evidently this river must have been frequented by eels in considerable numbers in olden times, as it has been called "Eel" river since before I can remember. This river is a tributary of the St. John, emptying into the latter twelve miles below the town of Woodstock, Carleton county, and is part of the division line between the counties of York and Carleton. It is 135 miles from the mouth of the St. John River. About fifteen miles (by water) up the Meductic (Eel) river is situated the village of Benton. This village is near the American border, and an American citizen came there this summer and began trapping els, with the result, so he reported to me, that he had taken thirty-five barrels when the eels stopped moving about this fall, for which he got \$10 per barrel, just across the line. He was able to put them there at that price, as the distance is short, probably he, or some other person, will follow this up another year, and I hope that it will be a success, and get at least a few eels out of these waters.

## WHITEFISH

Whitefish appear to have completely disappeared from Baker lake. It is beyond me to account for this condition. Several nets set for whitefish, were seized in this water during the present season, but there were less than one dozen whitefish in all of the nets when seized, which is substantial evidence that the fish are not there at present. During some recent years there has been more than 30 cwt. of whitefish taken from the lake, in one season, and the complete absence of this fish is a considerable loss to the residents of the lake shore. This fish must have descended Baker brook, to the St. John river, as that is the only way of egress.

The total weights and values of the commercial fish taken in this district during the years 1923 and 1924 are as follows:—

Year	Cwt.	Value
1923.....	3,783	\$ 33,924
1924.....	3,715	33,698

## MATERIALS

Year	Value
1923.....	\$ 16,845
1924.....	15,676

## DOMESTIC FISHERIES

Year	Cwt.	Value
1923.....	428	\$ 7,325
1924.....	473	8,845

The domestic fisheries of this district show a fair margin of increase in weight and value over the same of 1923, and equally as good as in 1922, which was considered a very good season.

Trout, generally, appeared to be plentiful, and in many districts trout angling was good. When one considers the numbers of persons who take more or less trout from the different streams that are not too remote from their homes, the wonder is not that some of the better streams become fairly well depleted, but, that there are any trout left in them at all. Probably there is not any question that a certain amount of illegitimate trout fishing is carried on, particularly as regards the number of trout per person per day, and the size



limit. There are some lakes, and many small streams, which contain large numbers of small trout, with apparently few large fish, and the latter appear to know how to take care of themselves. Of course there are hundreds who fish for trout who do not get nearly the limit of ten pounds, or thirty fish per day. I think that there is not any question as to the value of the work of the department in raising and distributing young trout in the different waters. The number of persons applying for both trout and salmon for distribution in the different localities is not very much of an indication as to the number of persons who do, or should, appreciate it, as many persons fish these same streams. Apart from the pleasure trout fishing provides, it is a source of considerable value, particularly in districts where other fish, or fresh meats, are not available during the warmer months.

Salmon angling was fairly satisfactory this year—as good as it was in 1923, but with the scene shifted about some. It will be observed that there is an approximate increase in weight of 30 cwt., as compared with the previous year. This is accounted for by the fact that inspectors are allowed to issue certain permit for taking salmon with rod and line before the 24th day of May. In 1923 Ex-Inspector Crocker (District No. 2) issued some special permits, allowing the holder to take two salmon per day for his own use, if the fish were fit for food. No applications were received by me that year (1923), but the present year some twenty-seven applications were made to me, and permits issued to the applicants free of charge, but the permits I issued allowed only one salmon per day per person, as I think that one salmon is about all any ordinary family could use in a day, particularly if followed up for some days, and, it would appear that it was followed up fairly well, as I had a fishery guard on duty during the period, from the time salmon began to descend the Miramichi river on their way to feeding grounds again, until May 24, when fresh run of salmon are beginning to ascend the river, and this guardian reported that approximately 400 salmon were taken by the early spring anglers in his district, which comprised, at this time, the Miramichi river, in York county, and it is only on a short portion of the river nearest Northumberland county that salmon are taken in the early season. These fish, generally, look fairly good, and they taste somewhat of salmon flavour, and they appear to be appreciated by those taking them, therefore, as long as the matter is under control, probably no harm is being done.

Because of more or less dissatisfaction amongst the salmon anglers of the upper Miramichi waters I was authorized to employ two special fishery guardians for patrol duty on that river in Northumberland county. Two good men were secured in Carleton county, and they spent some weeks in Northumberland county, with very satisfactory results—a considerable amount of illegal fishing materials being destroyed, and, no doubt, the lives of a considerable number of salmon being spared, to reach the spawning grounds later. Salmon angling on the St. John river, at the Hart's Island pool—almost within the limits of the city of Fredericton—was not nearly so good as it was in 1923. Last year (1923) was an exceptional one at this pool, and apparent conditions were not very dissimilar this year, but for some reason, sportsmen could not land their fish this year. It has been suggested that spring freshets are filling, or otherwise changing the channel of the river at this place, and fish are not stopping as they did previously.

Some of these sport fishermen who had such great success in 1923, because they took many fish with little effort, rather commercialized the sport, consequently, they were greatly disappointed because the 1924 catch was not up to that of the previous year. The more "touchy sportsmen" pretended to think



that the pool was not being properly guarded by the fishery officer and guardian, but I can assure you that that was not the case, as officer McNally spent many nights at the pool, and guardian Pitcher was there every night, and stayed until morning.

A report from the Superintendent of the Tobique Salmon Club (which I read) stated that that club had a fairly satisfactory year on the Tobique waters. He further stated that during the spawning season they had the finest lot of large salmon on the beds that he had ever seen there—and he has been there about thirty seasons, I believe. Messrs Ogilvy Brothers, who have very good angling rights on that water, state that their season was not very good, and that about all of the salmon taken by their guests were net-marked.

#### FISHWAYS

Fishways in my district are, in general, in good condition. There are not any in Kings, Queens, or Sunbury counties. A new, or renewed, one is badly needed on the St. Croix waters at Forest City, York county.

#### PROSECUTIONS

Prosecutions during the year numbered twenty-five. These were for water pollution, and other violations of the Act.

Fines collected in 1924 from prosecutions in 1922.....	\$ 120
“ “ “ “ “ 1923.....	70
“ “ “ “ “ 1924.....	570—\$760
Fines imposed in 1924, and suspended.....	270
One case was dismissed by a magistrate.	

#### CONFISCATIONS

Confiscation of illegally used materials during the year number forty-one, twelve of which were of materials seized by my two special guardians who patrolled the non-tidal water of the Miramichi in Northumberland county, working in conjunction with Inspector Barry's officer and guardians in that district.

Approximate value of illegal materials seized in 1924.....	\$ 260
Value of materials seized in 1923 and sold in 1924.....	60
Value of materials seized in 1924 and sold in 1924.....	69
Approximate value of materials (illegal, and useless for sale) seized and destroyed in 1924.....	190

### REPORT OF S. T. GALLANT, INSPECTOR OF FISHERIES, PROVINCE OF PRINCE EDWARD ISLAND AND THE MAGDALEN ISLANDS, FOR THE YEAR 1924.

#### PRINCE EDWARD ISLAND

##### COD

Cod fishing operations usually begin between the 25th and last of May, but it was late in June before any fish were landed, due possibly, to the unusual weather conditions prevailing during the month of May. Fishing, however, continued good during the balance of the season; there was an active demand, with fair prices, and as a result, I am pleased to report a catch of 41,036 cwt. which is an increase of 13,745 cwt. over that of 1923, with a marketed value of \$81,885, or an increase of \$20,490.

##### HAKE AND CUSK

The catch was 15,430 cwt. This is an increase of 4,454 cwt. The marketed value was \$27,081, or an increase of \$6,307.

## HERRING

The catch was 37,716 cwt. This is a decrease of 15,597 cwt. The marketed value was \$58,664, or a decrease of \$18,311. The decrease was no doubt due to the fact that the shore was hemmed in with ice until May 25th.

## MACKEREL

For the first time in twenty years, or so, mackerel hung around the shores all summer and were caught in fair quantities with hook and line. The catch was 7,646 cwt., which is an increase of 4,747 cwt. The marketed value was \$37,448, or an increase of \$19,439.

## SALMON

Some 62 cwt. were taken. This is an increase in the catch of 28 cwt., and an increase in value of \$530. No attempt has been made on the part of the fishermen to develop this important fishery, probably on account of the high cost of equipment, etc. I am looking forward, however, to the time when this fishery will play its part in increasing the revenue of this Province.

## SMELTS

The catch was 14,273 cwt. with a marketed value of \$133,747. There is an increase of 4,489 cwt. and an increase in value of \$12,514.

## EELS

There were 785 cwt. caught, valued at \$7,835. There is an increase of 702 cwt. with an increase in value of \$7,111.

## LOBSTERS

The catch of lobsters was 65,893 cwt., which is a decrease of 31,563 cwt. The marketed value was \$777,301, or a decrease of \$628,605.

No doubt the unusual ice conditions during the month of May were largely responsible for the decrease in the catch; the winter was very mild up to March 12, and as a result no board ice formed. The prevailing winds for the balance of March, April, up to May 20, were northeast, filling up the gulf with heavy northern ice, which, being very heavy grounded in eight and ten fathoms of water. As lobsters during the latter part of April are found in eight to twelve fathoms of water, no doubt the heavy ice scattered the school, and a small catch resulted.

It is pleasing to report, however, that there was a marked increase in the catch in the Late Season district, that is, between West Point and Victoria. It will be observed that only a small percentage of the lobsters caught in the Late Season district are canned, from 60 to 70 per cent being shipped in the shell principally to the United States markets. I am informed by some of the shippers that the mortality in the lobsters shipped alive during the month of August is between 25 and 40 per cent. This is a waste that should be prevented, if at all possible, in fact, it is a matter worthy of the consideration of the shippers who have in mind the furthering of their own interests and the development of the industry as well.

Now that the prospects for the marketing of cod are good it would be well for the fishermen to devote more time to the cod fishery and lessen their efforts so far as lobster fishing is concerned. No doubt the decreased catch of lobsters is a blessing in disguise, for had there been a normal catch the prices would have fallen probably to \$15 a case, and this, considering the high cost of equipment, etc., would have been \$9 or \$10 below the cost of production. It would be well for packers and fishermen to bear in mind the fact that lobsters are being consumed slowly, and, as a result, many of the buyers are left with large quantities of the season's pack still on their hands.

## OYSTERS

There were 7,945 barrels of oysters taken. This is an increase of 3,910 barrels. The marketed value was \$63,840 or an increase of \$23,490.

Operations began under most favourable conditions, the weather being all that could be desired. Large quantities of oysters were landed daily up to November 15; there was a keen demand for the fish and good prices were obtained. After the above date the markets became overstocked, and the prices fell so low that fishing ceased. Had the market continued much larger quantities of oysters could have been taken. East, West Rivers, and tributaries, Orwell, and Vernon rivers are well stocked with small oysters and a good catch is anticipated for next season.

During the summer we had some oysters placed in Richmond bay for observation, and I am pleased to report that in the month of October an examination was made and these fish were found to be in a thriving condition. If these oysters show no sign of blight next season it may be concluded that the disease which has been killing the fish for the last eight years or more has run its course and is a thing of the past.

## FISHERIES PROTECTION SERVICE

Many attempts at illegal lobster fishing were frustrated by the guardians, and some seventeen offenders were cited before the courts and fined.

Total number of prosecutions for various violations of the Fishery Regulations during the year.....	41
Total number of confiscations during the year.....	15

## FISHERIES PROTECTION SERVICE BY PATROL "RICHMOND"

The patrol boat *Richmond* was in charge of Captain Thomas Baglole and Assistant Fred McKinnon, and began patrolling duties on July 10, after being made ready for sea. She continued patrolling until November 29, when she was laid up in her winter quarters at Ellis river. The following seizures of lobster gear were made:—

Year	Rope	Traps	Anchors
	fath.		
1924.....	2,051	300	5
1923.....	1,400	192	7

The captain and his assistant were most zealous in the discharge of their duties, and did all in their power to suppress illegal fishing.

## MAGDALEN ISLANDS

## COD

The demand for cod, which is at present world-wide, is very encouraging to those engaged in this fishery. The catch was 53,144 cwt. with a marketed value of \$153,141, which is an increase of 21,218 cwt. and \$97,670 in value.

## HERRING

There were 119,748 cwt. taken. This is an increase of 4,876 cwt. The marketed value was \$77,006, or an increase of \$2,895. In former years this fishery was an important item of revenue to the fishermen, as a large number of fishing vessels usually procured their bait at this point during the fishing season, but of late years this practice has been discontinued.



## MACKEREL

Some 37,515 cwt. of these fish were taken. This is an increase of 924 cwt. The marketed value was \$121,588 or an increase of \$32,593. The method of curing mackerel has greatly improved during the last two years, and the quality of the fish is now much better than in the past. It is a pity that spring net-mackerel cannot be sold fresh, as they are too thin for salting, and can command only a very low price. Proper means of transportation prevents shipping them fresh.

## LOBSTERS

The catch was 17,605 cwt. which is a decrease of 12,376 cwt. The marketed value was \$223,123 or a decrease of \$220,498. The same weather conditions prevailed as in the other Provinces, hence the same percentage of decrease.

## REMARKS

Means of transportation by boats has been opened between House harbour and Grand entry through what is known as a lagoon. Dredging at this point was carried on with great success. This was a longfelt want and the people are loud in their praises of the Government for having afforded them this means of communication. As every man, woman, and child on these islands depend largely on fishing for a livelihood, any improvements which can be effected to lighten the burden of these good, law-abiding citizens will be greatly appreciated.

### REPORT OF J. B. SKAPTASON, INSPECTOR OF FISHERIES, PROVINCE OF MANITOBA, FOR 1924

The year 1924 shows an increase in the total commercial catch for the province of 23,808 cwt. of all fish, and an increased market value of \$211,968. The figures are as follows:—

1923		1924	
Quantity	Market value	Quantity	Market value
cwt.	\$	cwt.	\$
154,090	1,020,595	177,898	1,232,563

It will be seen the prices realized per pound average practically the same for the two years. 1924 prices, however, have been somewhat higher for the better grades of fish, whitefish and pickerel, while the cheaper grades, such as tullibee, pike and goldeyes, all show a considerable drop. The increased output is accounted for by nearly 300 additional operators as compared with 1923.

## MARKETS

Market conditions on the whole may be said to have been favourable during the entire year. The only exception being tullibee. During the winter season of 1923-24 prices were low and the demand poor. The present season 1924-25 even worse conditions threaten the operators. At present there is no demand for tullibee at any price.

The following are comparative prices of the chief or most important varieties of commercial fish as marketed in the last two years:—

	1923	1924
Catfish..... per pound	10.0	11.1
Goldeyes..... "	5.0	4.4
Perch..... "	8.6	10.6
Pickarel..... "	8.4	8.5
Pike..... "	3.7	3.5
Saugers..... "	5.0	5.3
Sturgeon..... "	47.3	50.0
Trout..... "	7.5	10.0
Tullibee..... "	5.5	3.6
Whites..... "	7.1	9.7

*The Pas, Sub-District* comprising all the waters north of the 53 parallel excepting the waters of lake Winnipegosis.

The winter fishing is much the same as the previous year, while the summer operations were considerably more extensive. On the Big Saskatchewan river the summer sturgeon operations produced only 36,000 pounds, as against 65,000 pounds the year before. The cause of this difference cannot reasonably be attributed to a falling-off in the catch. In 1923 there was keen competition amongst the buyers, and prices were run up to an unprecedented figure. This year the competition has been eliminated, also the velvety prices to the fishermen, resulting in only a few men going out. The catch per man, however, averaged slightly better than 1923.

Quite extensive operations were carried on in the Nelson river and its water expansions. The Armstrong Independent Fisheries operating on the lower reaches of the river with headquarters at Mile 239 on the Hudson Bay Railway, which is near Manitou rapids, put up a new ice house and freezer at this point last year. Their operations extended as far down the river as Kettle rapids, where an icehouse has also been built. This company had taken 89,000 pounds by August 9, when all fishing was stopped as the limit for the river was reached. The Purvis Bros. fishing in the upper river or Playgreen lake took 16,000 pounds.

The Armstrong catch was brought out by the Hudson Bay Railway to The Pas, while the Purvis Bros.' fish was taken out by Warrens landing to Selkirk.

The average weight of the sturgeon was 22 pounds. This is slightly better than during the previous year.

Much more caviar was taken than in 1923. This may be attributed to the late season which would result in a correspondingly later spawning of the fish. Some whitefish was taken by both the above operators, 11,000 pounds being caught by the Armstrong Company from Clearwater lake. This was a splendid quality of whitefish, averaging five pounds in weight. The Purvis Bros. took 51,000 pounds out of Big Grass lake in five weeks' fishing, also a good quality of fish.

Winter sturgeon fishing on the Churchill river was undertaken during the present season for the first time. The Booth Canadian Company and the Armstrong Independent each sent in a few men. Overseer Stevenson has just returned from a patrol of that part of his district and reports the enterprise only fairly successful. One outfit secured about 400 sturgeon averaging fully 25 pounds. This was taken at or near the Saskatchewan boundary and may be looked upon as a successful venture, as much of the time was taken up in locating the fish. The other outfit was not nearly as energetic or successful.



*Lake Winnipegosis.*—This lake has not been summer fished for whitefish during the last two summers. The year shows an increase in the catch of whites of 1,844 cwt., while the output of pickerel again is decreased by 5,527 cwt. Many of the fishermen and companies operating on the lake are coming to the conclusion that the lake will not support both summer and winter fishing, and that the time must come soon when the lake will have to be closed again for all summer fishing. The report shows 798 cwt. of tullibee as against 20 cwt. for 1923. This specie has hardly been known in the lake until the last two years, and during the present season; when it is considered that the smallest mesh used on the lake is  $4\frac{1}{4}$  inches, the 798 cwt caught may be considered quite a run.

The destruction of mullets was again carried on in the streams running into lake Winnipegosis. This work was in charge of S. J. Walker, Hatchery Inspector. The work this year was on contract basis, the fishermen being paid 1 cent apiece for the fish; 750,000 suckers were destroyed this way.

In connection with this work, such ripe Jacks (pike) as were running up streams in amongst the suckers, were stripped, the eggs fertilized, and several millions distributed and placed in small lakes in Manitoba and Saskatchewan.

*Lake Manitoba* shows a general increase in production of all varieties of fish. This, with the exception of the increase in tullibee, is accounted for by the increased number of men fishing. It is a very notable thing, the way this lake supports the tremendous drain it has been subjected to the last few years, without any artificial propagation of any of its fishes. During the past two winters approximately half the winter fishermen of the province have been operating on lake Manitoba. The tremendous tullibee production resulting in an increase from 3,900 cwt. in 1923, to 19,742 cwt. 1924, is unprecedented in the history of the lake. This catch was all made within two weeks of freeze up, the fall of 1924.

*Lake St. Martin* shows up much better than any of the past years. A good run of whitefish found its way up the Dauphin river in September and October.

*Lake Winnipeg.*—The summer season for whitefish (1st of June to 15th August) was very disappointing. With a limit of 3,000,000 pounds, only 1,456,700 were taken. This is a decrease from the previous year. The following are the figures for the last four summer seasons:—

1921	1922	1923	1924
2,966,000 lbs.	2,472,470 lbs.	1,523,800 lbs.	1,456,700 lbs.

In my 1923 report I made mention of increased catches of whitefish during the fall pickerel season on the inner or south part of the lake. I am glad to be able to report now, that this increase was even more marked during the fall fishing of 1924. Periods of the season produced whitefish aggregating from 10 per cent to 50 per cent as against pickerel. This is in the area of the lake from Black Bear island to the south end. Some years ago these waters had absolutely no whitefish, and it is in the last few years that a steady increase has been observed. This as I have previously reported, is generally attributed to the Gull Harbour hatchery.

The pickerel catch was much lighter for the past winter season than the immediately preceding one, the decrease amounting to approximately 40 per cent.

The sturgeon operations carried on in the vicinity of Pigeon river and the Winnipeg river show an increase in production fully in accord with the increased number of fishermen engaged, which would indicate no apparent depletion so far in these areas.

Stocking of small lakes in the southern and western areas of the province has been most energetically carried on by the officers of the district. The C.G.S. *Bradbury* made two trips from Gull harbour to Selkirk with pickerel fry hatched at the hatchery.



The lakes in the Turtle mountains have been stocked for several years now, with the results that pickerel have become so plentiful in them, it is considered by the forestry officer in charge of the area, that further stocking would not be beneficial.

During the year there were 36 prosecutions in the province for violations of the Fishery Regulations:

- 20 for use of illegal nets,
- 11 for fishing without license,
- 1 for having fish illegally in possession,
- 1 for fishing in prohibited area at St. Andrews locks,
- 1 for using illegal contrivance,
- 1 for fishing in closed season,
- 1 for interference with a fishery officer.

Convictions were obtained in all instances excepting the last. One conviction was appealed and lost by default, the department's lawyer neglecting to appear.

Revenue from fines.....	\$ 684 00
Revenue sales of confiscated articles.....	807 84
	<hr/>
	\$ 1,491 84

## REPORT OF G. C. MCDONALD, INSPECTOR OF FISHERIES, PROVINCE OF SASKATCEWAN, FOR 1924

A total catch of 60,685 cwts., of all kinds of fish was taken during the year in the province. This is an increase over the previous year of 22,921 cwts., and is due to the increase in the number of fishermen operating, as well as to the ideal weather conditions during the opening of the winter fishing season, when fishermen were able to commence operations on the first day of the open season. The statistics for the Peter Pond district are also included in this province for the first time, and account for a large part of the increase.

### WINTER SEASON

A total catch of 55,461 cwts. of all kinds of fish was taken during the winter season. This is an increase over the previous winter season of 33,076 cwts.

### SUMMER SEASON

There is a total catch of all kinds of fish during the summer season of 5,224 cwts. This is an increase of 536 cwts. over the previous summer season, due to more men operating and the reopening of Lowes lake to summer fishing.

### MARKETS

The market value of all fish produced commercially during the year is \$482,-492. This is an increase over the previous year of \$195,849 and is due largely to the increase in production and also to the increased quantity of green fish marketed during the winter season. There has been keener competition among fish buyers and increased demand. The local markets have been well looked after by the dealers and no complaints have been received regarding a shortage of fish for local trade.

### LICENSES

During the year there were 812 commercial fishermen licenses issued, being an increase of 224 over the previous year. This increase is partly due to the poor crop conditions in some districts as well as to the increased demand for fish.

## EQUIPMENT

The total value of equipment used during the year was \$79,472, an increase of \$27,816 over the previous year. There being an increase of 925 gill-nets, 12 hoop-nets, 4 lines, 11 piers, 20 ice houses, 41 row boats and 21 gas boats. Of this increase on Lowes lake there were 8 piers, 11 ice houses, 33 row boats and 16 gas boats, due to the opening of that lake for summer fishing. The balance of the increase was on Jackfish, Turtle and Worthington lakes, where considerable summer operations were carried on.

## FISHWAYS AND DAMS

During the year new fishways were constructed in the dam on the Turtle river near Mervin and in the dam on the Stoney creek near Melfort. The dam on the Red river near Red Wing and the one on the Carrot river near Kinistino were removed by the owners as they were no longer required. Other fishways are reported to be serviceable except that in the dam at the north end of Crooket lake, which is in poor condition and is receiving attention.

## CONDITION OF FISHERIES

There are no waters showing any immediate signs of depletion that would require any further special restrictions except probably Okemasis and Jackfish lakes which are both fished considerably during both summer and winter seasons owing to their proximity to the railroad. These two lakes were, however, replenished during the past summer with whitefish fry from the hatchery.

## DOMESTIC FISHING

A total catch of 14,641 cwts., of all kinds of fish was taken during the year under domestic license. This is an increase over the previous year of 4,649 cwts., of which whitefish account for 939 cwts.; trout, 30 cwts.; pike, 2,806 cwts.; with a corresponding increase in the other coarser species. This increase in catch is due to there being an increase in the number of domestic licenses issued of 159; as during the year there were 932 licenses issued, against 773 the previous year. The total catch per license is about 1,571 pounds, compared with 1,293 the previous year.

## ANGLERS

During the year it is estimated there was taken 23,048 cwts. of fish by anglers. This is an increase of 8,124 cwts. over the previous year. There is an increase of 12,123 anglers over 1923. The average catch per angler during the year was 63 pounds of fish each, compared with 60½ pounds in 1923. Angling is increasing from year to year due partly to the more remote waters being opened up by better trails leading to them. In a short time it may be found necessary to curtail commercial operations on some of these, especially those containing lake trout, which are now attracting the anglers. During the present year the regulations have been amended making it now necessary for non-residents to first obtain an angler's permit to fish in our waters, with the result that 376 angler's permits were issued during the year 1924.

## REGULATIONS

During the year there were ninety-six prosecutions in the province and a conviction secured in all cases except three, resulting in fines amounting to \$657 being imposed with additional costs to the defendants of \$359.45, as follows:—

Fishing during the closed season.....	43
Fishing with illegal apparatus.....	30
Illegal possession of fish.....	7
Fishing without license.....	4
Fishing with excess of nets.....	4
Fishing to excess under free permit.....	2
Obstructing a fishery officer.....	2
Pollution of waters.....	1
	<hr/>
	93

There were also ninety-five confiscations made during the year.—

Of illegal apparatus.....	29
Of legal apparatus.....	26
Of illegally caught fish.....	40
	<hr/>
	95

There were forty-seven sales of confiscated articles made, amounting to \$801.23.

## REPORT OF R. T. TODD, INSPECTOR OF FISHERIES, PROVINCE OF ALBERTA, FOR 1924

*Increases (Summer Season).—*A slight increase is to be noticed in the Cold lake district for the summer season chiefly due to the coarser varieties caught in Moose lake where more extensive operations were carried on. Trout show a decrease through the limit placed on Cold lake having been reached. A further increase in Wabamun lake is reported, the fish marketed being of an excellent variety and good prices were obtained throughout the summer. This lake is now considered as being well stocked and in a healthy condition. Fawcett lake lying in the Athabasca district, was fished for the first time in the summer season and an excellent quality of whitefish was obtained and successfully transported via the Athabasca river in boats to Smith on the Edmonton and Dunvegan Railway where the catch was reiced. The operation was a decided success and the fish marketed profitably and in a good condition.

*Increases (Winter Season).—*Cold and Primrose lakes show large increases in the winter season January 1 to February 15, and this is accounted for by a greater number of fishermen and larger operations. The winter season commencing December 1 shows a marked decrease, and overproduction has depleted these lakes. These lakes have a limit now placed on the catch, and it is doubtful if this limit will be reached at Primrose lake.

Trout and Peerless lakes situated in the Lesser Slave lake district account for large increases. The fishing particularly for trout was exceptionally good. I account for this by the fact that the lakes have not been fished to any great extent for the last four years and have therefore been able to recuperate from the heavy fishing of 1918-19. The Lac la Biche district shows an increase over that of 1923, Lac la Biche itself was fished for the first time for some years during the winter season accounting for the increase. The fishing at this lake was, however, very poor, and a few fishermen made even expenses. Pigeon lake continues to increase through larger operations owing to its close proximity to the larger centres in Alberta. The fishermen are able to market the fish locally and profitably.

*Decreases (Summer season).—*Lac la Biche district reports a decrease where fishing was both poor and unprofitable in pickerel and whitefish. The waters of northern Alberta are exceptionally low which may account in part for the



unsatisfactory fishing, and possibly in part from the fact that owing to their close proximity to the railways these lakes are being overfished. Lesser Slave lake shows a serious decrease over that of 1923. Exhaustive reports have been forwarded to the department and the very closest watch has been kept on conditions at this lake during the entire year. Briefly it is concluded that the decrease is through heavy fishing, larger operations and better equipment of the companies operating. Rough weather and a later opening of the season contributed to the above-mentioned decrease. Fishing at this lake during the winter was on a very small scale, and a decrease is noticed also in this season's fishing. A poor market for coarse fish discouraged the fishery at Lesser Slave lake during the past winter.

#### MARKETS

The market during the year 1924 was very unstable and quantities of whitefish were carried in cold storage until the fall season. Operations at Lesser Slave lake during the summer season, at the commencement, operated without a profit and in some cases at a loss. Towards the end of the season better prices prevailed. Filleted fish exported by the Menzies Fish Company from a new refrigerator plant at Faust, however, brought excellent prices in the fall, as high as 25 cents per pound being obtained. Winter prices have been low and although fishing has been poor there is still a great quantity of frozen fish on hand. It would appear that other markets must be obtained before any further development may be expected in the fisheries of this province. A new development has been successfully accomplished, that of shipping fish unfrozen, and during this present season four carloads were shipped and the prices paid average from 12 to 25 cents per pound. A greater development in this may be expected during the coming year.

#### EQUIPMENT

Equipment such as nets, etc., are much the same as last year but with a greater number of gill-nets in use. At Lesser Slave lake a new refrigerator plant was built with a capacity of 150,000 pounds and a value of \$4,000. This has proved to be a financial success and larger operations are contemplated. Two new gasoline launches were used this year on Lesser Slave lake. At Widewater, on Lesser Slave lake, fishermen are erecting a new ice-house where a number of them intend to co-operate and ship their fish direct to Chicago thus eliminating the middleman.

#### OBSERVANCE OF THE REGULATIONS

*Prosecutions and Confiscations.*—There were twenty-three successful prosecutions and twenty confiscations during the year 1924. One of these prosecutions was for the pollution of waters and several offenders were given time in order to clear débris, millwaste, etc. This was chiefly on the Saskatchewan river at Edmonton. The observance of the regulations was this year closely watched and offenders were immediately dealt with. On the whole it would seem that the general public and sportsmen are alive to the question of the conservation of sporting fish and commercial through the successful carrying out and the observance of the Fisheries Regulations:—

5	Prosecutions under	Section 27	(fishing with apparatus other than gill-nets).
8	"	" 1 and 32	(fishing without licenses or permits).
4	"	"	20 (fishing in close seasons).
2	"	"	34 (undersized fish).
1	"	"	44 (pollution of stream).
1	"	"	17 (fishing with illegal mesh).
2	"	"	77 (fishing in closed waters).

23 Total.

## DAMS AND FISHWAYS

A new fishway was built in the Canadian National Railways dam on the Blindman river at Burbank, and one on the Pembina river near Whitecourt. Both of these dams were built under the supervision of Overseer Mills and are reported as functioning properly. The sewage disposal plant of the Provincial Insane Asylum at Ponoka has been completed at an additional cost of nearly \$7,000. No sewage is now passing into the Battle river untreated.

The Lethbridge Northern Irrigation Company has been instructed and has agreed to build a fishway at the headgates of their canal on the Old Man river, west of McLeod. The Canadian Pacific Railway have repaired their fishway on the dam at the headgates of their Southern Alberta Irrigation canal on the St. Mary's river at Kimball near the international boundary.

## EXAMINATION AND STOCKING OF LAKES AND STREAMS

During the month of May, pike were transferred from Buffalo lake to Little Fish lake, a distance of approximately 125 miles with very good success. Tod creek, a tributary of the Old Man river was inspected with view to closing and restocking. Altogether twenty-eight lakes were examined during the year with view to stocking, some were found to be unsuitable for any species, some were found suitable, while others did not require stocking. Eight lakes were examined to determine the species of fish found therein, whether they should be classed as whitefish or coarse fish lakes. Five lakes were inspected and detailed reports made regarding conditions, with recommendations as to restriction of fishing, etc. Investigations of perch fishing at Lesser Slave lake was carried on by Overseer Travers for several weeks. Investigations during the winter fishing season has shown that species of whitefish found in Battle, McLeod and Sturgeon lake spawn late in December to the 1st of February. I would classify these fish as *Coregonus Labradorius* (Labrador Whitefish). They are very large some going as high as 11 pounds in weight in McLeod lake. Large whitefish are also being found in Pigeon lake this winter for the first time on record but they are the common whitefish and were through spawning before the season opened.

## ANGLING

Overseer Holmes reports that the angling throughout his district was good this season, except during the wet season when the streams were high and muddy. He states the catch in some streams were high, 50 per cent being Rainbow trout up to one pound in weight. Overseer D. A. Richardson also reports that the angling in his district was the most successful that he has known. It was better in the Bow river this year than for the last ten years. Rainbow trout have been caught in the Jumping pond and considerable numbers have been noticed in Pekisko creek. Rainbow trout measuring 14 inches were further caught in the main Highwood river. I might state that all such trout found in these districts are due to the stocking carried on from the Banff hatchery during the last few years. Very little angling for trout is carried on in the Red Deer and Saskatchewan rivers and their tributaries as only Dolly Varden trout are found. There are a number of very fine trout streams tributary to the Athabasca river, where Rainbow trout are found, but these streams were badly depleted during the construction of the Grand Trunk Pacific Railway and the Canadian Northern and have been so heavily fished since that the fish have very little chance to increase. These streams could be stocked very easily should a hatchery be constructed at Jasper Park. Trolling for lake trout at Cold lake this last season has been extremely good and has afforded good sport for a number of fishermen. 3,942 angling permits were sold during the year, an increase of 668 over last season, 108 being sold at Cold lake by the fishery overseer



REPORT OF CHIEF INSPECTOR MAJOR J. A. MOTHERWELL,  
WESTERN FISHERIES DIVISION (BRITISH COLUMBIA), FOR  
1924.

SALMON

The year 1924 has been an unusually successful one from the standpoint of catch. An examination of statement No. 1 appended hereto shows that the pack of all varieties combined was the largest on record and exceeds that of the previous record year of 1918 by 131,348 cases and last year by 405,828 cases. A particularly gratifying feature is the splendid pack of sockeye, the most sought after variety. The quantity put up has not been exceeded since 1915 in spite of the fact that since 1913 the Fraser river has ceased to be the large factor as far as sockeye are concerned.

It is interesting to note in connection with this variety of salmon that the large production during the year was the result of a smaller quantity of fishing equipment. The very great proportion of the catch is taken by means of gill-nets and the number of these was the smallest in many years and was 261 less than in 1923.

The quantity of pink salmon was 657,561 cases which constitutes a record for this variety. The previous largest pack was in 1922 but this was exceeded by 75,582 cases.

The total of 570,497 cases of chums exceeded the previous record pack of 1918 by 72,882 cases.

The figures with regard to the pinks and chums, however, cannot be safely taken as any criterion of the size of the runs in the several years. Market conditions have a very great deal to do with determining the quantities of these species taken. In the case of the sockeye, however, the figures quoted can be accepted as showing fairly accurately the history of the runs owing to the fact that this variety has always been in demand and every effort is made to put as large a pack as is possible.

Statement No. 2 shows the pack figures for the Naas river and it will be observed that the sockeyes total 33,590 cases, which has not been equalled since 1915. This year being that of the big run of pinks the total shows that the pack of the corresponding year 1922 was almost equalled.

The Skeena river, statement No. 3, will be found very interesting and shows the satisfactory way in which the supply of salmon is being maintained. According to Dr. Gilbert, in the run of sockeye to this river the four and five year fish predominate. An average of the runs of four and five years ago gives a pack of 137,907 cases, which has been exceeded this year by 6,825 cases. The average number of gill-nets fished in the Skeena river during 1919 and 1920 was 1,053 but during this year only 941 were operated. The quantity of sockeye taken together with the most gratifying conditions on the spawning beds proves beyond a doubt that the conservation measures employed in the district are entirely adequate.

By reference to statement No. 4 it will be observed that 91,764 cases of sockeye were canned at Rivers and Smiths inlets although including those caught in these inlets and canned outside, the pack would show as 101,808 cases. The number of gill-nets operating was 963 compared with 1,172 in 1923 when 118,502 cases were packed and 1,044 in 1920 when 142,793 cases were packed.

The condition of the spawning areas in the Rivers Inlet district was found to be eminently satisfactory, all the streams being crowded with spawning sockeye salmon. Here again there would appear to be no reason for pessimism as to the future supply.

Statement No. 5 covers conditions in the Fraser River district. It will be observed that although 209,050 cases of all varieties were packed in this district



only 118,241 cases were actually caught in the Fraser river area, the remainder being brought in from District No. 3.

The quantity of sockeye caught amount to 36,200 cases which, while up to the average of the previous six years is not encouraging in view of the average packs for corresponding years previous to 1913.

The run of sockeye to the spawning areas below Hells Gate, however, was well maintained and there would appear to be little reason to expect that the annual pack will be further reduced as long as conditions in Puget sound, state of Washington, do not warrant the fishing there of the large amount of equipment which was operated before the depletion of the 'big runs.

This was the "off" year for pinks in the Fraser which accounts for the very small pack of district fish although it will be observed that a considerable quantity was brought in from outside points and canned in District No. 1.

Owing to the fact that the sockeye running to the Fraser river have to run the gauntlet of the traps and seines in Puget sound a statement of the pack in that district is of interest and will be found, numbered 6.

#### SALMON—DRYSALTING

The market for dry salted chum salmon in the Orient was fairly attractive during the year and 7,403 tons of this product were exported to Japan. The fish are prepared in a quite crude way, their heads being taken off and the entrails removed, after which they are heavily salted and stacked in piles. After standing in this way until the salt has had an opportunity to sufficiently cure the fish they are packed in boxes containing approximately 400 pounds each and shipped overseas. It is interesting to note that the quantity mentioned above would have produced 200,000 cases of canned salmon.

#### SALMON—TROLLING

Owing to weather conditions the trolling for spring salmon and cohoes was not as productive as was expected. Fair prices were obtained, however, by the fishermen and such conditions will no doubt always obtain in view of the competition on the west coast of Vancouver island particularly from American buyers. There is absolutely no necessity for a close season regulation as conservation is taken care of by the weather.

#### SALMON—GENERAL

In conclusion I would reiterate the opinion expressed in last year's report to the effect that with the existing regulations, coupled with fish cultural operations as carried on by the department in the province, there need be no fear for the future of the salmon industry.

#### HALIBUT

The fishing operations during the year covered ten and one-half months instead of twelve as heretofore owing to the close season for halibut fishing coming into effect on November 15. It extends to February 15, or a total of three months, which covers the winter fishing. Notwithstanding the shorter season a very large catch was taken which amounted to 330,591 cwt. This quantity has only been exceeded in the year 1923 when 344,667 cwt. were taken. As suggested by Mr. J. P. Babcock, the Chairman of the International Halibut Commission, if there is no reduction in the annual catch in spite of the closed period the results from a standpoint of conservation of supply may leave something to be desired. In the efforts of the cold storage firms to provide halibut in the eastern markets during the three months in which there are no fish being delivered, their plants were filled with frozen fish and if the markets demand

the same quantity of halibut each year and are satisfied with either the fresh or frozen product during the closed period there will be little likelihood of reducing the annual catch. However, the first year will no doubt demonstrate whether the markets will be satisfied with other than the freshly iced.

Elsewhere in this publication appears information with regard to the International Halibut Treaty, the want of which has been felt so keenly for so many years. Without a doubt the halibut supply was rapidly becoming depleted and it is evident that some drastic action was imperative if this immense natural resource was to be saved. On every hand from the fishermen themselves and from others interested in the industry one hears expressions of the greatest gratification at the going into effect of the Halibut Treaty.

The record price of 23.6 cents per pound was paid in October for American caught fish. The previous high record was in October, 1923, when 23.1 cents was paid.

Statement No. 7 gives the landings of halibut in British Columbia from 1913 to 1924.

#### HERRING

Apart from limited seining operations in the vicinity of Prince Rupert for the purpose of obtaining halibut bait, the bulk of the operations are confined to the Barclay sound area on the west coast of Vancouver island and the east coast of the island between Nanoose bay and Cowichan bay. There was an unusually heavy run to both these districts during the year and the dry salt pack particularly showed a very considerable increase as will be observed from the following statement giving the packs from 1918 to 1924 inclusive:—

Year	District No. 1	District No. 2	District No. 3		Total
			East Coast	West Coast	
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1918.....	20,000	Nil	109,900	42,710	172,610
1919.....	4,000	Nil	43,000	208,058	255,058
1920.....	807	1	176,640	334,720	512,168
1921.....	249	Nil	231,240	248,482	479,971
1922.....	Nil	Nil	297,871	224,897	522,768
1923.....	Nil	8,935	250,420	484,681	744,036
1924.....	Nil	Nil	305,266	548,277	853,543

In view of the policy of the department looking to the elimination of the Orientals the industry should be totally in the hands of the white population and Canadian Indians by 1927.

#### PILCHARDS

There were 14,898 cases of pilchards canned during the year and these operations were confined to the west coast of Vancouver island. During recent years owing to market conditions there has been little encouragement for putting up large packs of this variety. In view of the enormous quantities which run to the waters of the west coast of Vancouver island and the fact that so little use can be made of them by canning or curing it has been requested by operators that they be allowed to use pilchards in the reduction works plants for the purpose of manufacture into fish meal, fish oil, and fertilizer.

#### WHALING

The three whaling stations operated, two in the Queen Charlotte islands and one on the west coast of Vancouver island, were not quite as successful as



during 1923, taking 415 whales of all varieties against 455 the year previous. The following statement shows the varieties:—

Variety	Kyuquot	Rose Hbr.	Naden Hbr	Total
Sperm.....	19	52	12	83
Sulphur.....	17	26	13	56
Fin.....	48	46	41	125
Hump.....	19	25	3	47
Sei.....	48	50	2	100
Gray.....		1		1
Bottlenose.....		1		1
Right.....			2	2
Totals.....	141	201	73	415

#### FUR SEALS

The number of fur seal skins taken by the Indians as the herds were on their way north to the Pribilof islands and cleared through the customs at British Columbia ports at Vancouver, Victoria, and Prince Rupert, amounted to 2,232. Under the Pelagic Sealing Treaty it is only the Indians who are permitted to hunt these mammals and then only by means of spears used from canoes propelled entirely by means of oars, paddles or sails and manned by not more than five persons each.

The prices for the fur seal skins averaged approximately \$10, compared to \$15 the previous year.

#### DESTRUCTION OF SEA LIONS

The work of reducing the number of sea lions which have been the cause of so much loss to the fishermen in the Rivers inlet and Smiths inlet districts in past years was continued in the spring of this year. The C.G.S. *Givenchy* was again utilized and weather conditions being found more favourable than usual it was possible to land conveniently on the barren rocks and reefs where sea lions were most plentiful and great execution was done. The expedition was timed for the middle of the pupping season.

Landings were made on the Virgin Islands on June 1, 8, 9 and 10, and on the Pearl islands on June 8 and 10. As usual a Lewis gun was used as well as .44 calibre Winchester rifles and .22 calibre automatic pistols. The total number of lions killed during the hunting was 2,706, compared with 1885 in 1923 and 220 in 1922.

It is interesting to observe the attitude of the fishermen and cannerymen in the districts which have been benefited by the sea lion hunt. These did not hesitate to express in the warmest terms possible their appreciation of the department's action and their attitude was the result of the previous two years' experience in fishing which demonstrated beyond a doubt that much money was being saved to the fishermen themselves and the cannerymen. It is stated by the fishermen that previous to the department's sea lion hunts the gill-nets damaged by these mammals in Rivers inlet during the fishing season had amounted to as many as eight or 10 per week whereas this damage had been reduced to two per week. Undoubtedly these operations are well justified.

#### PATROL SERVICE

There were seventy-five boats of various sizes used in the Fisheries Patrol Service during the year including the trawlers *Malaspina* and *Givenchy*, and the oil burner *Marfish*. Twenty-two of these are owned by the department and the remaining fifty-three were chartered for such periods as required to supervise the fisheries in districts in which they were employed. In addition there were two seaplanes operating out of Prince Rupert.



During the year the *Malaspina* logged 18,404 miles, and the *Givenchy* 14,253 miles. The work performed by these boats included the protection of the three-mile limit against poaching from foreign fishing boats particularly in connection with the halibut industry. Protection was given the fur seals from the time they reached the waters opposite the British Columbia shore until they had passed beyond the boundary line on the north on their way to the Pribilof islands. Further duties consisted of the planting of eyed sockeye salmon eggs in a number of streams and lakes along the coast, the usual annual sea lion hunt, which during the last year was unusually successful, a close patrol of the salmon seining areas which becomes more and more necessary each year owing to the greater number of seine boats operating as a result of cheaper licenses, and the better demand for all varieties of salmon. Assistance was rendered the Customs and Post Office Departments in transferring their officers from point to point and in assisting in the enforcement of regulations in connection with the liquor traffic. One of these boats was also used by the chief inspector travelling about the coast making inspections of the different fishing establishments and in the general course of his inspection work. The *Givenchy* was employed for several weeks at the first of the year and the last two weeks at the end of the year in life saving duties on the west coast of Vancouver island, being stationed at Bamfield.

The two seaplanes consumed 152 hours 8 minutes actual flying time. The results obtained fully justify continuing this method of patrol. Unfortunately during the year it was found that the planes were poorly engined and as a consequence did not give as good service as would otherwise have been the case. However, it is understood that this condition is being rectified before the coming season. Considerable photographic work was done in the course of the patrol. The information in this way obtained will undoubtedly be of great value in the inspection of spawning areas and in planning the restocking of areas requiring attention. With the assistance of the numerous photographs it should be possible to reduce the expense of surveys, the pictures showing in many cases whether it would or would not be advisable to incur the expense of sending parties in for the purpose of examination.

In such districts as the south east coast of Queen Charlotte islands where the waters are not charted and where there are no settlements which could be used as headquarters for patrol boats, the only really efficient patrol which can be provided is that by means of the seaplanes, and in view of the more intensive fishing for the fall varieties of salmon such a patrol is becoming more and more imperative.

The two sixty-foot patrol boats built during the year equipped with semi-Diesel engines have proved extremely satisfactory and undoubtedly justify their construction. These were designed by Engineer Allen after several years of experience in looking after the repairs of the patrol boats in British Columbia, and after his observations of the style of boat which would provide the most efficient patrol at the least expense.

#### REGULATIONS

The enforcement of the regulations during the year resulted in ninety-two prosecutions with eighty-three convictions. The sum of \$2,242.19 was received as the proceeds of fines and sales of confiscated articles.

On the whole the regulations were fairly well observed but in view of the intensive fishing for the fall varieties of salmon it is becoming more and more difficult to provide an efficient patrol of the numerous salmon streams in the province.

Much difficulty is experienced in revising the angling regulations in such a manner as will suit all varieties of fishing in the numerous angling waters. Particular attention during the year has been given to these difficulties and while in a sparsely settled province such as British Columbia there are many difficulties being encountered yet satisfactory results are being obtained. The advisability of the departmental officers working closely with the numerous angling associations has been surely demonstrated.

#### REDUCTION IN ORIENTALS

By reference to statement No. 8 some very interesting facts will be observed with regard to the effect of the department's policy in the elimination of the Oriental from the fisheries of the province. The statement covers the period since the first reductions were made. It is shown that although there has been a reduction made by the department of 40 per cent in the Oriental salmon gill-net licenses issued there was actually a decrease of 1.8 per cent in whites but an increase of 4.1 per cent in Indian licenses. A closer inspection shows that in District No. 1 the whites increased 2.8 per cent and the Indians 32.3 per cent. On the Skeena river there has been an increase of 56 per cent whites and of 6.2 per cent in the case of the Indians.

In the Rivers and Smiths inlets the result has been a decrease of 12.7 per cent and 21 per cent in whites and Indians respectively.

In the case of salmon trolling, District No. 3 is the only one in which Orientals are permitted with the exception of one license in District No. 2. These licenses are divided between the east and west coast of Vancouver island. On the east coast the reduction in Orientals has been 51.3 per cent. The whites and Indians have increased 39.1 per cent and 58.5 per cent respectively. On the west coast the decrease in Orientals has been 57.5 per cent and the increase in whites and Indians has been 46.3 per cent and 87.9 per cent respectively.

During the year the number of Orientals employed in the seining and dry salting of herring was reduced by 25 per cent and it is the intention to make a further reduction of 25 per cent of the original number each year until all the Orientals are eliminated in the year 1927 and the industry will then be in the hands of white men and Canadian Indians only.

#### SCIENTIFIC INVESTIGATION

The permanent appointment of an officer in charge of the Biological Station at Nanaimo and the arrangement for the building and maintenance of a second station at Prince Rupert will go a long way towards solving the fishery problems of this province which are of such immense importance. The need of scientific investigation in connection with salmon and halibut fisheries particularly has been very urgent and although results cannot be hoped for in one or two years yet a start has been made and undoubtedly the results which will be obtained will well justify the steps taken.

#### POWER BOATS IN SALMON GILL-NET FISHING

Until the season of 1924 power boats were not permitted in the salmon gill-net fishing in the northern district, including such areas as the Naas river, Skeena river, Rivers inlet and Smiths inlet. The boats used were supplied by the cannery owners and were of the sailing skiff variety. Acting on the recommendation of the 1922 fisheries commission, however, power boats were permitted, commencing with the year 1924. The effect of this privilege is shown



in the following statement giving the total number of power boats used in each of the important areas:—

Area	Whites	Indians	Japs	Total
Smiths inlet.....	9			9
Rivers inlet.....	51	3		54
Skeena river.....	18			18
Naas river.....	1			1
Bella Coola.....	3			3
Total.....	82	3		85

It is observed that the average catch of the power boats in Smiths inlet was 1,358 sockeye while the average of sixty-one sailing skiffs was 1,309 sockeye. In the Skeena river district it was the sailing skiffs which turned in the larger catches and the power boats were found to be inconvenient owing to the tides and the difficulty in the taking in of the gill-nets. Against this of course a very great deal of hard work by means of rowing was eliminated with the power boats and the fishermen were far more comfortable.

In the Bella Coola area the catches by means of power boats were slightly better than those where sail boats were used.

Taking into consideration the extra initial cost and also the operating cost in the case of the power boats the increased gross returns to the fishermen would not appear to be commensurate with the increased expense.

#### REMOVAL OF OBSTRUCTIONS IN SALMON STREAMS

Each year considerable sums are spent by the department in keeping clear the streams up which salmon run to their spawning grounds. Much valuable work is done in this way although often under most hazardous conditions. Owing to the great distances which have to be covered in looking after this important work much time is consumed. Difficulty is often experienced in obtaining suitable men locally and these very often have to be taken considerable distances at much expense. However, the results obtained amply justify the expense which has been incurred to date and it is imperative that these very important operations be continued each year. Many reports of obstructions are received each season which on examination are found not to justify any expenditure but much valuable time is often lost owing to the necessity for officers of the department making long trips for the purpose of inspection and which show that the reported obstructions do not exist, or at least do not prevent parent fish reaching their spawning beds.

It is becoming increasingly difficult to supervise the operations of loggers who in their prodigal methods of cutting the timber often fill the smaller salmon streams with branches and tree tops in such a manner as to cause an obstruction to the ascent of salmon. While every effort is made to control such operations there are times when loggers will in a very short time cause considerable damage and either leave the country or become financially embarrassed and this results in the department's officers having to take whatever action is necessary. In instances where it is possible to have the work done by, or the cost recovered from the offenders, the necessary action is always taken.

#### WAREHOUSE AND MARINE WAYS, FRASER RIVER

The premises at present occupied on the Fraser river for the purposes of warehouse are in such a condition as to make it imperative that new quarters be obtained immediately. Owing to this fact and also in view of the large amount



of repair work which is required each year on the boats of the department it was considered advisable to obtain new quarters where marine ways, machine shop and warehouse could be combined and in addition a mooring float for the launches of District No. 1 provided. A very suitable site was procured on Poplar island and it is expected that in the early spring the construction will be completed and a considerable amount of the repairs to the boats can then be looked after by Engineer Allen with the assistance of other employees of the department and at a considerable saving.

#### SCOTCH FISHERMEN

It has been stated repeatedly that there are opportunities in the fishing industry in British Columbia for good white fishermen who are not afraid of work and who have had experience in other parts of the Empire. Particular mention has been made of Hebridean fishermen who it has been stated, owing to considerable distress lately suffered in their own country, have been considering emigrating to this coast. On their behalf arrangements have been made with the Government of British Columbia which may result in the bringing out of a number of families to certain portions of Vancouver island although no definite plans have yet been made. The Imperial Government is co-operating with the Government of British Columbia in this matter but it is hoped that satisfactory provision will be made looking to the living accommodation and occupation of these people before any considerable number are brought to this coast.

#### INSPECTION OF SPAWNING AREAS

The following is a concise report of conditions as found on the salmon spawning areas following the usual annual inspection by fishery officers after the fish had arrived on the several spawning beds.

*Queen Charlotte Islands.*—Owing to the fact that 1924 was the big year for pink salmon in the Queen Charlotte island district the run was very large and would appear to show no depletion. In the northern area the Mamion, Ian, Yakoun, Naden and Lignite rivers are the most important and the spawning areas of all these were found to be exceptionally well seeded with pink salmon. While the sockeye do run to the first four mentioned streams the quantity is very small compared to the pinks but the average was well maintained. The spawning areas in the creeks along the east coast of the islands were satisfactorily seeded. The condition on the west coast of these islands from a standpoint of lack of knowledge of the exposed uncharted waters results in no fishing operations apart from trolling for spring salmon from Skidegate inlet north.

*Naas River.*—In spite of the good pack amounting to 33,582 cases of sockeye the spawning areas were found to be particularly well stocked by parent sockeye salmon. The reports received from both the federal and provincial officers show an unusually large quantity of parent salmon and the prospects for a big return are excellent. The work done last year by the engineers of the department by way of repairs to the fishway in the Meziaden river proved to be extremely satisfactory and the salmon had absolutely no difficulty in passing into the lake and in fact at the time of inspection the inspecting officers estimate that they observed in the vicinity of 200 salmon in each of the basins of the fishway on their way through during the whole time of their stay. Approximately 90 per cent of these were sockeye. All the smaller rivers and streams flowing into the lower part of the Naas river were well seeded with pinks, chums, and cohoes.

*Skeena River.*—Although the pack of sockeye salmon on the Skeena was 144,747 cases, the third largest on record, the spawning areas were this year again heavily seeded and conditions generally over the watershed were found

to be extremely satisfactory. In the Lakelse lake area the run was very heavy and is claimed to have been the largest in a considerable number of years. The hatchery at that point was filled to capacity in a few days and many times the quantity of eggs could easily have been obtained. The spawning grounds were well seeded naturally. There was also a satisfactory supply of pink salmon in the lake.

In the Babine lake area which is the principal spawning district in the Skeena watershed for sockeye salmon, the several areas were found to have an abundant supply of parent fish. There was no difficulty in filling the hatchery at Morrison creek to capacity in a few days and many more eggs could have been taken. It is interesting to remember in this connection that during the first few years this hatchery was in existence eggs were collected at far distant points on the lake. Owing to the placing of the resultant fry in the stream which runs past the hatchery door the staff finds it unnecessary to go further than this same stream for a capacity collection and even then the parent fish are not all used. The run of sockeye, springs, cohoes and pinks to the Kispiox river was entirely satisfactory. At present there is an obstruction in the stream which has cut off a portion of the spawning grounds. This will be cleared away before the next run of salmon arrives.

Generally speaking the spawning areas of the Skeena were particularly well stocked this year.

*Central Division.*—Owing to the heavy rains during the runs of salmon practically all the streams in this area were well taken care of as the parent fish were able to ascend quickly instead of having to mill about the mouths of the streams waiting for the water to rise. In dry years they easily fall a prey to fishing operations particularly if the boundaries are not properly enforced.

*Bella Coola and Kimsquit.*—A very satisfactory run of sockeye reached the Bella Coola river estimated to exceed that of the preceding year by 50 per cent. The run of springs was also quite satisfactory and the same can be said of the pink and coho runs.

In the upper Kimsquit river satisfactory supplies of parent sockeye were observed. The supply of pinks and chums, however, was only fair. A large proportion of the runs of the fall varieties to Dean and Burke channels spawn in the small streams tributary and in certain instances these were found to contain poor supplies. The attention of the officers responsible has been called to this condition and any necessary steps will be taken looking to conservation.

*Rivers Inlet.*—The tributaries of Owekano lake, the spawning ground for Rivers inlet fish, were found to contain very large quantities of parent sockeyes even after a pack of 83,176 cases had been taken from the run. The condition of the beds was found to be unusually encouraging, all the streams without exception being found to be well stocked. In addition a collection of 15,998,000 sockeye eggs was made by the hatchery staff with no difficulty. Such a satisfactory state is ample evidence that the fishing regulations as enforced provide adequately for a good escapement of parent fish.

The benefit of the work done by the engineering staff in the way of clearing of obstructions to the ascent of salmon in the several streams emptying into Owekano lake has been splendidly demonstrated and there is no question as to the efficacy of such clearing operations. The general opinion is that the run to the inlet this year has been one of the best ever experienced.

*Smiths Inlet.*—During the fishing season there appeared to be evidence that a very large supply of parent fish on the spawning beds might be looked for. Unfortunately the local departmental officer found it impossible to make the usual annual inspection but a copy of a report received from the provincial officer, Mr. A. W. Stone, who is very familiar with conditions in this district,



shows that the quantity of spawn on the beds was not as large as was expected although it is probable that a fair run may be looked for in the cycle year.

*Alert Bay District.*—There was again a most satisfactory run of sockeye to the Nimpkish river in spite of the fact that there were ten drag-seines operating in the river and several purse-seines on the outside. By closely watching the quantity of parent salmon which were able to escape the nets during the fishing season and during the close season the boundaries were altered when necessary with the result that the examination of the spawning beds showed very satisfactory quantities of parent salmon on the spawning beds. The hatchery operations conducted by the British Columbia Fishing and Packing Company Limited on Nimpkish lake were discontinued after the liberation of fry in the spring of this year.

Through the district generally good runs of the fall varieties were experienced.

*Quathiaski District.*—This is primarily a fall fish area although at several points there is a fair run of sockeye salmon. The spawning beds generally speaking were heavily seeded with pinks particularly Salmon river and Bear river. Port Neville, which has been closed for four seasons in order that the small sockeye run at that point might be revived, showed the results of the closure and quite a good run was observed although that of the same variety to Phillips arm was only light.

*Comox District.*—This also is a fall fish area. The Oyster, Puntledge, Big Qualicum, Little Qualicum, and Tsolem rivers being the principal streams. There was a heavy run of pinks to practically all of these and the spawning beds were well seeded with this variety. The run of cohoes and chums, however, was very light. It is on the even numbered years that the big run of pinks occurs in the Comox district.

*Pender Harbour District.*—The only run of sockeye of any importance is to Sauch-en-Auch creek. The supply at this point had a few years ago shown the effects of intensive fishing and the boundaries were so placed as to give the fish a greater opportunity to ascend to the lake. In addition a fishway was constructed which has proved very efficient. The result is that the run has been increased very considerably and an inspection of the spawning grounds showed that the beds were extremely well seeded.

This being the "off" year for the pinks in the district the supply was found to be light and the quantity of chums can only be classed as medium. Greater care will be taken in the district to the end that the runs may be well conserved.

*Nanaimo District.*—This is not a sockeye area but there is usually a good run of chums. At Chemainus river the spawning grounds were heavily seeded with this variety. A heavy run was also observed at Porters creek, Bush creek, and Walkers creek and Stocking Lake creek. The coho run can only be classed as fair.

*Cowichan District.*—There are no sockeyes ascending the streams in this area. The spawning beds of the Cowichan and Koksilan rivers were well seeded with eggs of the spring and coho variety. There was also an excellent run of chums and steelhead trout to these streams.

*Alberni District.*—There was a fair run of sockeye salmon to the Stamp, Sproat, Somass and Anderson rivers. The chum run generally speaking was quite heavy particularly in the Stamp, Sproat, Somass, Nahmint and Salmon rivers, although the run at Sarita was not as good as expected. Pinks do not usually run to the Alberni district.

There was a heavy run of chum salmon at Nitinat lake and in spite of a pack of 47,742 cases of chums put up by the local cannery the spawning grounds



were found to be well seeded. There was a small run of creek sockeye to Nitinat lake as well but this is seldom fished.

Gordon river showed a good supply of coho salmon on the spawning grounds and this applies to the San Juan river as well.

*Clayoquot Sound District.*—The only sockeye streams in this area are the Kennedy and the Medgan rivers, the supply observed on the spawning grounds being quite satisfactory. In fact the areas in Kennedy lake were found to contain abundant quantities of sockeye spawn in spite of a pack of 4,737 cases put up by the cannery at the mouth of the Kennedy river and the shipping of a considerable quantity out of the district. The several streams in the district were found to be satisfactorily seeded with chums and cohoes.

*Nootka Sound District.*—This is primarily a chum district and on the Conuma, Sawand, Tashis and Verner rivers a plentiful supply of spawning chums were observed on the beds. Springs were fairly plentiful in the Burman and Gold rivers. The run of cohoes through the district was, however, quite small.

*Kyuquot District.*—Several of the streams contained fair supplies of pink salmon but this is not considered a pink area. An inspection of the spawning grounds showed a fair run of chums over the whole district and quite a good run of cohoes.

*Quatsino District.*—There are no sockeye in this area but the run of cohoes was quite good and the spawning areas showed quite a plentiful supply of parent chum salmon on the spawning grounds. As a rule there is only a medium run of pinks to the area.

*Fraser River Watershed.*—An examination of the spawning areas above Hells gate gives little encouragement although Stuart lake district Indians report having seen more sockeye this year than for some seasons previously, particularly at Middle river, Takla lake, and Tachi river. In the Bowron Lake district, a few sockeye were seen a considerable distance up Bear Creek. At Quesnel lake the indications of natural seeding were very disappointing, although during the summer large quantities of sockeye fingerlings are reported to have passed down the lake and river. The residents who have lived in the district for a considerable number of years remarked that it looked like old times to see so many fingerlings passing out to sea. There would seem to be every justification for the claim that these are the result of the egg planting operations by the Fish Cultural Branch of the department. There is nothing of particular interest from the other spawning areas above Hells gate. It was again definitely demonstrated, however, that the several varieties of salmon are able to pass Hells gate.

Below that point conditions have been found to be much more satisfactory.

At Harrison Lake the superintendent of the hatchery reports that the run of sockeye to the hatchery pond outlet was, for an "off" year, the best since the hatchery was built. There was quite a satisfactory run to Morris creek also and that to the rapids in the Harrison river was above the average. The collection of sockeye eggs at the Harrison Lake hatchery amounted to 6,518,000.

At Cultus lake over five million eggs were taken by the hatchery staff and the acting superintendent estimates that at least twenty millions could have easily been collected. He was obliged to knock out the bottom fence as it was impossible to hold between the fences all the salmon that came up to the lake.

In the Pitt lake district the superintendent of the hatchery estimates that the run of sockeye was the best since the hatchery was established.

The run of sockeye to the Birkenhead river and Pemberton district was the largest in the experience of the superintendent. Thirty-one millions of eggs were taken and enormous quantities of fish were permitted to pass up this river to spawn naturally.

This was an "off" year for the pink run to the Fraser river but the supply of chums was quite satisfactory.

#### GENERAL

Reviewing the conditions generally over the province it is safe to conclude that the sockeye spawning areas have, apart from above Hells gate on the Fraser river, with almost no exception, been unusually well seeded this year and this in spite of the fact that the pack of this variety is the largest since 1915. Heavy rains at the proper time undoubtedly assisted very materially and particularly in the case of the fall varieties. When the salmon arrived there was sufficient water in the streams to permit of their ascending to the spawning beds.

STATEMENT OF SALMON PACK—BRITISH COLUMBIA

WHOLE PROVINCE—1876 TO 1924

STATEMENT No. 1

Year	Num-ber of can-neries oper-ated	Number of salmon licenses issued					Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoes	Pinks	Chums	Totals
		G.N.	Troll	P.S.	D.S.	T.N.										
1876.....	3	Particulars not available.					"	"	"	"	Particulars of varieties not available—practically all sockeye.					9,847
1877.....	4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	67,387
1878.....	10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	113,601
1879.....	9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	61,093
1880.....	9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	61,849
1881.....	12	"	"	"	"	"	"	"	"	"	"	"	"	"	"	177,276
1882.....	18	"	"	"	"	"	"	"	"	"	"	"	"	"	"	255,061
1883.....	24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	196,292
1884.....	17	"	"	"	"	"	"	"	"	"	"	"	"	"	"	141,239
1885.....	9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	108,517
1886.....	17	"	"	"	"	"	"	"	"	"	"	"	"	"	"	161,264
1887.....	20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	204,083
1888.....	21	"	"	"	"	"	"	"	"	"	"	"	"	"	"	184,040
1889.....	28	"	"	"	"	"	"	"	"	"	"	"	"	"	"	414,294
1890.....	32	"	"	"	"	"	"	"	"	"	"	"	"	"	"	408,978
1891.....	26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	314,893
1892.....	27	"	"	"	"	"	"	"	"	"	"	"	"	"	"	228,470
1893.....	37	"	"	"	"	"	"	"	"	"	"	"	"	"	"	590,229
1894.....	32	"	"	"	"	"	"	"	"	"	"	"	"	"	"	494,371
1895.....	36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	566,395
1896.....	47	"	"	"	"	"	"	"	"	"	"	"	"	"	"	601,570
1897.....	54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1,015,477
1898.....	51	"	"	"	"	"	"	"	"	"	"	"	"	"	"	484,161
1899.....	59	"	"	"	"	"	"	"	"	"	"	"	"	"	"	732,437
1900.....	64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	585,413
1901.....	73	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1,236,156
1902.....	66	"	"	"	"	"	531,436 Springs and Fall:				94,546				625,982	
1903.....	59	"	"	"	"	"	Particulars of varieties not available—practically all sockeye.				Fall:				473,674	
1904.....	51	"	"	"	"	"	323,226 (35,421 Red & Wh. Springs)				Fall:				465,894	



1905.	67	"	"	1,080,673	(38,359 Red & Wh. Springs)	.....	44,458	13,970	1,167,460
1906.	64	"	"	459,679	31,261	1,083	69,132	(68,305 Pks & Ch.)	629,460
1907.	58	"	"	314,074	23,159	2,939	87,900	(118,704 "	547,459
1908.	52	"	"	355,023	25,433	2,731	81,917	(76,448 "	542,689
1909.	72	"	"	840,441	18,218	799	61,918	(46,544 "	967,920
1910.	58	"	"	565,915	19,313	9,476	74,382	34,613	58,362
1911.	59	"	"	383,509	38,751	9,705	119,802	305,247	91,951
1912.	57	3,640	.....	444,762	62,345	18,092	165,309	247,743	58,325
1913.	78	4,782	.....	972,178	37,433	3,616	69,822	192,887	77,965
1914.	63	4,857	.....	536,696	32,908	16,420	120,201	220,340	184,474
1915.	63	4,951	.....	476,042	51,734	6,370	146,956	367,352	82,000
1916.	72	4,600	.....	214,789	51,231	15,495	183,623	280,644	240,201
1917.	94	5,286	1,370	339,848	48,630	27,646	157,589	496,759	475,273
1918.	88	5,073	1,786	276,459	65,535	41,819 Pk. & Wh.)	191,068	527,745	497,615
1919.	82	4,598	2,260	369,445	73,179	18,295	175,670	346,639	372,035
1920.	65	4,761	1,855	351,405	95,983	13,877	101,972	520,856	84,626
1921.	56	4,777	1,452	163,914	36,725	6,966	117,288	192,906	71,408
1922.	64	4,491	1,513	299,614	21,163	11,913	102,845	581,979	238,204
1923.	61	3,957	1,446	334,647	17,559	4,745	112,044	440,932	418,055
1924.	62	3,696	1,553	369,601	18,741	2,591	115,944	657,561	570,497

NOTE.—Licenses issued 1923 and 1924 include transfers from one district to another.



[illegible]



## PACK OF CANNED SALMON ON THE SKEENA RIVER—1876 TO 1924

STATEMENT No 3

Year	Num- ber of can- neries oper- ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue- backs	Steel- heads	Cohoos	Pinks	Churns	Total
		G.N.	Troll.	P.S.	D.S.	T.N.									
1876	1														3,000
1877	2														8,500
1878	2														10,603
1879	2														19,694
1880	2														21,560
1881	2														24,522
1882	2														31,157
1883	5														53,986
1884	5														12,900
1885	2														37,587
1886	3														58,592
1887	5														70,106
1888	5														58,165
1889	6														90,509
1890	7														78,135
1891	7														90,280
1892	8														59,675
1893	7														61,151
1894	7														67,797
1895	7														100,140
1896	8														65,905
1897	8														81,234
1898	6														108,026
1899	7														128,529
1900	10														126,092
1901	11														154,875
1902	10														98,669
1903	10														154,869
1904	11						93,404	(20,621	Red & Wh. Spr.)			10,315	30,529		114,085
1905	12						84,717	(14,598	Red & Wh. Spr.)			7,247	7,523		162,420
1906	14						86,394	20,138				16,867	(38,991	Pk. & Ch.	159,255
1907	13						108,412	10,378				15,247	(25,217	Pk. & Ch.)	209,177
1908	13						139,846	13,374	468			10,075	(45,404	Pk. & Ch.)	



## PACK OF CANNED SALMON FROM FISH CAUGHT AT RIVERS INLET AND SMITHS INLET, 1881 TO 1924

STATEMENT No. 4.

Year	Number of canneries operated	Number of salmon licenses issued				Sock-eye	Red Spring	Pink Spring	White Spring	Blue backs	Steel-heads	Cohoos	Pinks	Chums	Varieties other than sockeye packed at Smiths Inlet	Totals
		G.N.	Troll.	P.S.	D.S.	T.N.										
1881.....	1						Particulars of varieties not available—practically all sockeye.									5,635
1882.....	1						"	"	"							10,780
1883.....	2						"	"	"							20,383
1884.....																
1885.....							Particulars of varieties not available—practically all sockeye									
1886.....	1						"	"	"							15,000
1887.....	2						"	"	"							11,203
1888.....	2						"	"	"							20,000
1889.....	2						"	"	"							25,704
1890.....	2						"	"	"							32,961
1891.....	2						"	"	"							34,924
1892.....	2						"	"	"							15,126
1893.....	2						"	"	"							35,266
1894.....	2						"	"	"							39,351
1895.....	3						"	"	"							58,579
1896.....	4						"	"	"							107,468
1897.....	6						"	"	"							40,207
1898.....	6						"	"	"							104,711
1899.....	6						"	"	"							71,079
1900.....	6						"	"	"							75,413
1901.....	6						"	"	"							66,840
1902.....	6						74,019 Other varieties.		"	1,479						75,498
1903.....	5						Particulars of varieties not available—practically all sockeye									75,530
1904.....	5						101,542 (11 Red & Wh. Spr)					358	61			101,972
1905.....	6						90,713 (351 Red & Wh.)									91,064
1906.....	8						Spr.) 132,631									132,878
1907.....	8						97,874					66	6,240 (700 Pk. & Ch.)			105,564



	8		74,452	1,254				9,505 (4,679 Pk. & Ch.)			89,890
1908.....											
1909.....	8		102,527	1,087				1,400 (300 Pk. & Ch.)			105,314
1910.....	8		141,921	383				2,075	19		144,398
1911.....	8		105,763	1,317				8,287	6,411	5,288	127,066
1912.....	8		129,217	1,452			468	11,095	11,723	4,843	158,798
1913.....	8		79,345	1,589				3,708	4,287	2,015	90,944
1914.....	*7		89,890	566				7,789	5,784	5,023	109,052
1915.....	8		162,651	1,022				7,115	2,964	5,387	292 179,431
1916.....	9		58,192	1,033			389	15,314	3,567	20,144	13,900 112,629
1917.....	10		75,326	715			102	9,124	8,065	16,101	4,325 113,758
1918.....	10		68,447	957	85		367	12,074	29,542	6,729	10,736 128,937
1918.....	10		66,842	967	86		367	12,074	29,542	6,729	10,736 127,552
1919.....	11		73,754	967	234		2	9,038	6,538	7,089	13,053 110,736
1919.....	11		72,072	967	234		2	9,038	6,538	7,089	13,053 109,234
1919.....	10		142,793	1,537	81		190	2,922	26,189	1,226	174,938
1920.....	10		153,245	1,537	81		190	2,922	26,189	1,226	165,390
1921.....	10		50,849	386			44	4,055	3,055	173	58,562
1921.....	10		49,729	406			44	4,784	5,896	173	60,569
1922.....	10		68,818	216	69		82	1,145	24,311	311	94,990
1922.....	10		66,518	216	69		82	1,145	24,311	311	92,690
1923.....	10		118,502	230	256		113	1,526	10,057	3,246	133,930
1923.....	10		112,250	230	256		113	1,526	10,057	3,246	127,778
1923.....	10		91,764	215	261		149	1,886	15,103	4,908	114,318

NOTE.—Figures shown in black are packs from fish caught at Rivers Inlet or Smiths Inlet. Figures in black for years previous to 1918 are actual packs. Figures shown in *italic*, 1918 to 1923, are actual packs irrespective of where fish taken and not including fish shipped out for canning in other districts.

\* 1914 figures include Rivers Inlet pack only, no figures being available for Smiths Inlet for that year.

NOTE.—Re column "Varieties other than sockeye packed at Smiths Inlet." For the years this column is utilized, figures of the different varieties other than sockeye packed at Smiths Inlet were not available, and had to be shown as a total. Sockeye for these years are shown under their proper heading.

† Statement No. 3 on page 68.

## PACK OF CANNED SALMON IN THE FRASER RIVER DISTRICT—1876 TO 1924

Year	Num-ber of can-neries oper-ated	Number of salmon licenses issued					Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Chums	Totals	
		Number of salmon licenses issued															
		G.N.	Troll.	P.S.	D.S.	T.N.											
1876.....	3	Particulars not available.					“	“	Particulars of varieties not available—practically all sockeye.							9,847	
1877.....	5	“	“	“	“	“	“	“	“	“	“	“	“	“	“	64,387	
1878.....	8	“	“	“	“	“	“	“	“	“	“	“	“	“	“	105,101	
1879.....	7	“	“	“	“	“	“	“	“	“	“	“	“	“	“	50,490	
1880.....	7	“	“	“	“	“	“	“	“	“	“	“	“	“	“	42,155	
1881.....	8	“	“	“	“	“	“	“	“	“	“	“	“	“	“	142,516	
1882.....	11	“	“	“	“	“	“	“	“	“	“	“	“	“	“	199,104	
1883.....	13	“	“	“	“	“	“	“	“	“	“	“	“	“	“	109,701	
1884.....	6	“	“	“	“	“	“	“	“	“	“	“	“	“	“	38,437	
1885.....	6	“	“	“	“	“	“	“	“	“	“	“	“	“	“	89,617	
1886.....	11	“	“	“	“	“	“	“	“	“	“	“	“	“	“	99,177	
1887.....	12	“	“	“	“	“	“	“	“	“	“	“	“	“	“	130,088	
1888.....	12	“	“	“	“	“	“	“	“	“	“	“	“	“	“	76,616	
1889.....	16	“	“	“	“	“	“	“	“	“	“	“	“	“	“	303,875	
1890.....	16	“	“	“	“	“	“	“	“	“	“	“	“	“	“	241,889	
1891.....	11	“	“	“	“	“	“	“	“	“	“	“	“	“	“	178,954	
1892.....	11	“	“	“	“	“	“	“	“	“	“	“	“	“	“	79,715	
1893.....	21	“	“	“	“	“	“	“	“	“	“	“	“	“	“	457,797	
1894.....	20	“	“	“	“	“	“	“	“	“	“	“	“	“	“	363,967	
1895.....	21	“	“	“	“	“	“	“	“	“	“	“	“	“	“	400,368	
1896.....	29	“	“	“	“	“	“	“	“	“	“	“	“	“	“	356,984	
1897.....	35	“	“	“	“	“	“	“	“	“	“	“	“	“	“	860,459	
1898.....	35	“	“	“	“	“	“	“	“	“	“	“	“	“	“	256,101	
1899.....	41	“	“	“	“	“	“	“	“	“	“	“	“	“	“	510,383	
1900.....	48	“	“	“	“	“	“	“	“	“	“	“	“	“	“	316,522	
1901.....	49	3,832	Particulars not available				“	“	“	“	“	“	“	“	“	990,313	
1902.....	42	2,685	“				293,477	Other Varieties: 33,618							“	“	327,095
1903.....	35	3,101	“				204,809	(2,084: Red and White Spring)							“	“	237,125
1904.....	23	2,224	“				72,688	(9,482: Red and White Spring)							“	“	128,903

1905.	38	2,770	"	"	837,489	(5,507: Red and White Spring)	.....	30,836	3,304	.....	877,136
1906.	24	1,746	"	"	183,007	.....	.....	34,413	(15,543 Pk. & Ch.)	.....	240,486
1907.	18	1,726	"	"	59,815	.....	.....	35,766	(63,530 Pk. & Ch.)	.....	163,116
1908.	16	1,374	"	"	63,126	.....	.....	24,198	(415 Pk. & Ch.)	.....	89,184
1909.	38	2,688	"	"	542,248	.....	.....	21,540	(1,987 Pk. & Ch.)	.....	567,203
1910.	21	1,577	"	"	133,045	.....	.....	27,855	.....	.....	223,148
1911.	15	1,396	"	"	58,487	.....	.....	39,740	.....	.....	301,344
1912.	15	1,430	"	"	108,784	.....	.....	38,574	.....	.....	173,921
1913.	35	2,560	"	"	684,596	.....	.....	11,648	.....	.....	732,059
1914.	20	2,656	"	"	185,483	.....	.....	38,639	.....	.....	328,390
1915.	22	2,616	"	"	89,040	.....	.....	34,114	.....	.....	289,119
1916.	21	2,240	"	"	27,394	.....	.....	24,580	.....	.....	106,440
1917.	29	2,626	"	"	123,614	.....	.....	25,895	.....	.....	377,988
1918.	18	1,582	"	"	16,849	.....	.....	40,111	.....	.....	206,003
1919.	14	1,337	"	"	29,628	.....	.....	39,253	.....	.....	158,718
1920.	11	1,288	"	"	44,598	.....	.....	22,934	.....	.....	132,860
1921.	13	1,437	"	"	35,900	.....	.....	29,978	.....	.....	103,917
1922.	10	1,296	"	"	48,744	.....	.....	23,587	.....	.....	137,482
1923.	11	964	"	"	29,423	.....	.....	20,173	.....	.....	224,637
1924.	9	969	"	"	36,200	.....	.....	21,935	.....	.....	209,050

NOTE.—Licenses issued 1923 and 1924 include transfers from other districts.



## PACK OF CANNED SALMON OF PUGET SOUND FROM 1887 TO 1923

## STATEMENT No. 6

Year	Number of canneries operated	Spring	Sockeye	Cohoe	Chum	Pink	Steelhead	Total
1887.....		Particulars of varieties not available.						22,000
1888.....	4	"	"	"	"			21,975
1889.....	2	240		7,480	1,145	2,890		11,674
1890.....	1	1,000		3,000	4,000			8,000
1891.....	2	382	5,538	5,869	3,093	5,647		20,529
1892.....	2	86	2,954	7,206	16,180			26,426
1893.....	3	1,200	47,852	11,812	11,380	17,530		89,331
1894.....	3		41,781	22,418	22,152	9,049		95,400
1895.....	7	1,542	65,143	50,865	38,785	23,633		179,968
1896.....	11	13,495	72,979	82,640	26,550			195,664
1897.....	12	9,500	312,048	91,900	23,310	57,268		494,026
1898.....	18	11,200	252,000	98,600	38,400			400,200
1899.....	19	24,364	499,646	111,387	31,481	252,733		919,611
1900.....	19	22,350	229,800	128,200	89,100			469,450
1901.....		Particulars of varieties not available.						1,380,590
1902.....	21	30,049	372,301	85,817	93,492			581,659
1903.....	22	14,500	167,211	103,450	12,001	181,236		478,488
1904.....	13	14,441	109,264	118,127	49,656			291,488
1905.....	24	1,804	325,453	79,335	41,057	70,992		1,018,641
1906.....	16	8,139	178,748	94,497	149,218			430,602
1907.....	14	1,814	93,122	119,372	50,249	433,423		698,080
1908.....	22	95,210	170,951	128,922	47,607	6,075		448,765
1909.....	11	13,019	1,097,904	143,133	53,688	370,993		1,632,949
1910.....	24	10,064	248,014	162,755	146,942	108		567,883
1911.....	15	21,823	127,761	256,124	104,321	1,046,992		1,557,029
1912.....	20	20,252	184,680	149,727	60,760	700		416,125
1913.....	22	1,234	1,673,099	61,019	56,225	791,886		2,583,463
1914.....	31	26,044	335,230	151,893	278,801	892		792,860
1915.....	41	28,466	64,548	180,783	411,724	583,649		1,269,206
1916.....	32	37,030	84,637	155,832	427,878	1,887		707,278
1917.....	45	57,543	411,538	114,276	216,285	1,124,884		1,921,554
1918.....	32	63,366	50,723	235,860	267,538	6,605	106	624,198
1919.....	35	68,542	64,346	210,883	525,541	421,215	5,076	1,295,626
1920.....	11	25,846	62,654	24,502	48,849	4,669		166,520
1921.....	23	25,567	102,967	89,412	30,831	404,713		653,490
1922.....	16	20,615	48,566	111,711	65,552	2,225		248,729
1923.....	18	15,777	47,402	122,000	97,081	475,849	29	758,138
1924.....	12	19,968	69,369	87,879	134,360	5,945	128	317,649

## STATEMENT OF HALIBUT LANDINGS—BRITISH COLUMBIA, 1913 TO 1924

## STATEMENT No. 7

	Cwts.
1913.....	223,465
1914.....	214,444
1915.....	194,896
1916.....	123,062
1917.....	113,529
1918.....	186,229
1919.....	210,777
1920.....	238,770
1921.....	325,868
1922.....	293,184
1923.....	334,667
1924.....	330,591

STATEMENT SHOWING INCREASE OR DECREASE IN LICENSES ISSUED IN 1924 OVER LICENSES ISSUED IN 1921 AND 1922,  
BRITISH COLUMBIA

## FISHERIES BRANCH

Variety of License	Area	Licenses issued, 1924				Increase over 1922			Decrease from 1922			Totals All nationalities		
		Whites	Indians	Japs.	Total	Whites %	Indians %	Japs. %	Whites %	Indians %	Japs. %	Net In-crease	Net De-crease	
												%	%	%
Salmon Gill-net.	Whole province. Percentage.	1,443	1,074	1,179	3,696									795 17.7
"	District No. 1. Percentage.	401	45	523	969	11 2.8	11 32.3							327 25.2
"	District No. 2— Naas River Percentage.	17	98	95	210				15 46.9	16 14	63 39.9			94 30.9
"	Skeena River Percentage.	248	308	385	941	89 56	18 6.2				257 40			150 15.9
"	Rivers Inlet and Smiths Inlet. Percentage.	503	369	91	963				64 12.7	98 21	66 42			228 19.1
"	Outlying. Percentage.	144	162	56	362						55 49.5			63 14.8
"	Total District No. 2. Percentage.	912	937	627	2,476									535 17.7
"	District No. 3. Percentage.	130	92	29	251	43 49.4	44 91.7				20 40.9	67 36.4		
Boat.	Whole province. Percentage.	88	12	101	201	11 14.3	6 100				64 38.8			47 18.9
Buyers.	Whole province. Percentage.	51		25	76				34 40		16 39			50 39.7

STATEMENT SHOWING INCREASE OR DECREASE IN LICENSES ISSUED IN 1924 OVER LICENSES ISSUED IN 1921 AND 1922,  
BRITISH COLUMBIA—Concluded

STATEMENT No. 8

Variety of License	Area	Licenses issued, 1924				Increase over 1921			Decrease from 1921			Totals All nationalities	
		Whites	Indians	Japs.	Total	Whites	Indians	Japs.	Whites	Indians	Japs.	Net In-crease	Net De-crease
Salmon Trolling.....	Whole province.....	776	552	225	1,553	167	213	279	.....	.....	.....	101	.....
"	District No. 1.....	48	.....	.....	48	23	62.8	55.4	.....	.....	.....	6.9	.....
"	District No. 2.....	217	186	1	404	16	53	4	.....	.....	.....	23	.....
"	District No. 3— East Coast.....	331	103	94	528	8	39.9	80	.....	.....	.....	92	.....
"	West Coast.....	180	263	130	573	57	123	176	.....	.....	.....	65	.....
"	Total, District No. 3. Percentage.....	511	366	224	1,101	150	161	275	.....	.....	.....	19.2	.....
						41.6	78.5	55.1	.....	.....	.....	32	.....
						39.1	58.5	51.3	.....	.....	.....	6.4	.....
						46.3	87.9	57.5	.....	.....	.....	4	.....
									.....	.....	.....	0.7	.....
									.....	.....	.....	36	.....
									.....	.....	.....	3.4	.....





SUMMARY—BRITISH COLUMBIA—COMPARATIVE STATEMENT OF LICENSES ISSUED—SEASON 1924-1925—*Concluded*  
As at DECEMBER 31, 1924

STATEMENT No. 9

	Season, 1922 Issued				Season, 1923 Licenses issued and transfers made				Season, 1924 Licenses issued and transfers made			
	Whites	Indians	Japs.	Total	Whites	Indians	Japs.	Total	Whites	Indians	Japs.	Total
Groundfish Drag-seine.....	10		2	12	6		1	7	14	1	1	16
Groundfish Trawl.....	26		34	60	32		20	52	19		21	40
Herring and Perch Prospecting.....	1			1								
Ootopus.....	1			1								
Oolichan.....	16	1	2	19	17	2	1	20	12	2	1	15
Perch Drag-seine.....	13	7		20	15	6		21	13	2		15
Perch Gill-net.....	6		7	13	6		6	12	5		6	11
Perch Trap-net.....	1			1								
Perch Trawl.....	1		7	8	3		1	4				
Rock Cod Trawl.....			9	9	1		1	2			1	1
Sand Lance.....			1	1	1		1	2	1		1	2
Sea Egg.....			1	1								
Shrimp Trawl.....	11		29	40	15		21	36	9		21	30
Trapang.....			1	1			1	1				
Angling Permits.....	51		1	52	4		1	5	7			7
Totals.....	3,115	1,545	2,933	7,593	3,934	2,598	2,627	9,159	3,800	2,774	2,537	9,111
Indian Permits.....						153		153		59		59

None.—Previous to 1923 transfers of licenses from one district to another were not allowed. 1923 and 1924 figures include such transfers, as it is considered that if such were not permitted, licenses in their places would have been issued. With the exception of Grayfish, Hook and Line Licenses figures show actual licenses issued, transfer of Japanese licenses not being permitted; these figures include twelve transferred Oriental licenses.

## APPENDIX 2

## FISHERIES

## FINANCIAL STATEMENT, 1924-1925

Vote No.	Service	Appropriation	Expenditure
		\$ cts.	\$ cts.
256	Salaries and disbursements of fishery officers, Fisheries Patrol Service, Fisheries Protection Service.....	880,000 00	771,068 69
257	Building fishways and clearing rivers.....	30,000 00	7,692 83
258	Legal and incidental expenses.....	2,000 00	2,000 00
259	Conservation and development of deep-sea fisheries.....	95,000 00	29,829 18
260	Fisheries Intelligence Bureau.....	2,000 00	404 03
261	Inspection of canned and pickled fish.....	25,000 00	22,994 50
262	Fish culture.....	370,000 00	346,997 66
263	Investigations, into fisheries.....	10,000 00	7,230 03
264	Marine Biological Board.....	42,000 00	42,000 00
		1,456,000 00	1,230,216 92
	Civil Government salaries.....	98,180 00	92,414 29
	Contingencies.....	20,000 00	14,226 11
Stat'y.	Fishing bounty.....	160,000 00	159,826 40
		1,734,180 00	1,496,683 72
363	Cost of Living Bonus.....		36,307 83
	Superannuation No. 4, Retirement Act, 1920.....		2,516 66
	Superannuation No. 4, Retirement Act, 1920 (annuity).....		196 94
	Gratuities.....		730 00
	Unforeseen expenses (Finance Department).....		10 00
	Total net expenditure, 1924-1925.....		1,536,445 15





DETAILED STATEMENT OF EXPENDITURE, SALARIES AND DISBURSEMENTS OF FISHERY OFFICERS, 1924-25

FISHERIES BRANCH

81

Provinces	Inspector's, Overseer's and Ward's		Allowances				Gasolene and Oil		Special Guardians		Sundry		Total				
	Salaries		Disbs.		Auto		Boat		Horse		Wages		Expenses				
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.			
<i>Nova Scotia</i> —																	
General Account.....	11,509	67	1,327	25										13,062	31		
Truro School.....			3,564	08										225	39		
Nova Scotia, District No. 1.....	13,320	00	2,557	59	3,200	00	681	25			15,709	35	66	90	4,178	03	
" " No. 2.....	16,598	23	3,141	76	4,281	72	253	76			7,806	11	338	12	35,829	36	
" " No. 3.....	17,981	61	3,525	61	3,884	94	64	52	475	00	6,596	00	71	75	32,946	94	
	59,409	51	14,116	29	11,366	66	999	53	475	00	30,111	46	467	77	118,771	53	
<i>Prince Edward Island</i> —																	
Prince Edward Island, District No. 1.....	8,250	00	2,234	39							1,600	00	5,820	67	19,212	96	
" " No. 2.....	2,370	00	765	68			300	00			312	20	549	00	4,428	07	
	10,620	00	3,000	07			300	00			1,912	20	6,369	67	23,641	03	
<i>New Brunswick</i> —																	
New Brunswick, District No. 1.....	9,600	00	1,763	00	1,600	00	400	00	230	00	165	22	2,945	00	16,810	89	
" " No. 2.....	17,361	30	2,977	51	4,676	34	1,226	21			755	10	10,026	57	37,208	01	
" " No. 3.....	7,080	00	1,205	35	500	00	93	75	375	00	113	74	7,041	30	16,428	80	
	34,041	30	5,945	86	6,776	34	1,719	96	605	00	1,034	06	20,012	87	70,447	70	
<i>Quebec</i> .....																	
															178	47	
<i>Manitoba</i> .....	7,928	98	3,003	58			215	60	800	00			885	52	14,197	83	
<i>Saskatchewan</i> .....	9,279	56	3,762	15	281	25	187	50	1,250	00			480	00	16,469	50	
<i>Alberta</i> .....	8,915	00	4,337	40	225	00	262	50	600	00			942	50	16,431	37	
<i>British Columbia</i> —																	
General Account.....	18,170	14	1,309	07											3,168	70	
British Columbia, District No. 1.....	10,550	50	7,865	65											1,271	08	
" " No. 2.....	11,540	46	3,005	85											2,887	67	
" " No. 3.....	13,442	61	6,308	76											1,917	17	
															322	82	
	53,703	71	18,489	33							99	88	16,764	91	6,679	77	
General Account.....															10,501	66	
																10,501	66





## DETAILED STATEMENT OF EXPENDITURE—FISHERIES PATROL SERVICE, 1924-1925

Establishments and Accounts	Paylist		Board or Prov'n.		Fuel		Repairs		Supplies				Clothing		Sundry		—	Total		
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	Engine	Deck	Stewards	\$	cts.	\$	cts.					
Nova Scotia— "Mildred McCall" "A"	3,633	94	0	38	1,672	71	119	12	712	13	173	59	74	52	67	74	64	61	6,565	21
	2,548	01	2	46	595	65	70	00	89	60	164	59	28	51	29	25	96	25	3,624	32
	6,181	95	2	84	2,268	36	189	12	801	73	338	18	103	03	96	99	160	86	10,189	53
Prince Edward Island— "Ostrea" "Richmond"	1,086	66															4	20	4	20
	1,086	66			169	02	29	48	40	00	30	02	7	96	44	95	71	43	1,479	52
					169	02	29	48	40	00	30	02	7	96	44	95	75	63	1,483	72
New Brunswick— "C" "Chalrope" "Shannon" (chartered)	3,826	61			679	93											130	00	130	00
	2,580	00			730	33			52	11	430	88	53	58	57	69	10	00	5,146	44
	6,406	61			1,410	26			30	42	57	69	604	25			604	25	3,945	00
									52	11	461	30	53	58	57	69	744	25	9,221	44
Manitoba— "Bradbury"	9,896	36	2,607	40	6,287	21	39	52	17	60	381	87	864	83	371	08	242	75	21,519	12
British Columbia— General Account Digby Island Supporton Warehouse Chartered Boats "Akashi" "Aramac" "Baker" "Corvecia" "Dorothy N." "Dustie" "Fefoba" "Echo No. 1" "Elk" "Elkhart" "Eric" "Esperanza" "Flier" "Flying Spur"	2,935	36	24	67	29	05	3	65	381	76	119	25	6	65	0	44	1,549	86	2,116	22
	840	00			63	51			0	85	142	56	5	90	12	13	221	53	3,353	55
					520	75					45	15					6	40	1,070	50
					114	00					46	25					1,240	00	48,247	89
					* 33	52					10	28					134	00	2,688	08
					245	16					19	50			4	20	109	00	734	57
					800	00					9	49			1	56	76	00	504	41
					519	35					11	77			4	98	395	02		
					144	65					32	28			1	66	218	30	1,122	56
					772	50					20	52			3	20	690	00	1,334	00
					437	64					12	74			1	37	840	00	1,337	19
					545	49					7	40					137	00	1,695	88
					150	00					82	30					137	50	800	78
					1,029	03	1	00									213	50	45	00
					24	76					6	29			2	25	291	50	1,874	08
				747	66					31	08					31	00	62	05	
																807	00	1,736	04	



"Bonila"	2,917 96	1,024 41	389 08	208 42	203 50	47 43	59 25	114 51	4,964 56
"Cloyah"	1,649 16	500 80	454 77	146 45	161 10	136 34	114 11	195 79	3,350 52
"Cohoe"	899 20	488 79	223 35	165 20	40 84	7 52	31 10	58 09	1,922 37
"Egret"	1,515 00	488 02	333 90	244 22	45 88	46 52	63 85	77 10	2,816 49
"Elk"	3,420 00	426 01	74 55	2 20	2 17	16 56	43 98	80 10	4,065 57
"Fispa"								40 00	40 00
"Foam"	4,500 00	524 29	649 97	177 28	23 86	56 25	118 28	103 05	6,168 43
"Gull"	1,008 06	76 17	451 63	2,998 11	227 01	95 46	88 12	114 94	5,067 78
"Hawk"	1,904 44	401 15	104 90	244 88	64 08	67 54	42 37	55 68	2,885 04
"Heron"	1,299 55	447 95	350 05	54 35	81 78	43 33	37 39	51 86	2,366 26
"Humming Bird"		8 50		56 15					64 65
"Linnett"	1,320 97	399 56	242 93	107 20	56 78	23 06	68 22	46 51	2,265 23
"Marfish"	5,563 96	2,162 73	1,773 86	34 16	269 19	359 13	200 91	389 90	12,064 03
"Merlin"	1,147 55	323 35	76 98	65 48	59 09	77 60	10 26	40 06	1,800 37
"Merrysea"	4,500 00	749 84	291 08	425 56	84 83	10 66	33 20	217 32	6,329 29
"Revidis"	2,099 69	463 50	32 42	325 48	1,361 64	630 06	498 43	6,069 01	11,480 23
"Swan"	4,500 00	562 34	226 49	208 62	6 29	41 26	83 17	95 77	5,725 85
"Vanadis"	5,229 24	574 94	173 54	360 15	1,403 95	563 78	321 69	6,080 23	15,890 20
"Vedder"	3,420 00	570 80	140 32	138 13	21 57	4 79	40 64	41 06	4,377 31
	76,413 09	17,721 72	6,440 17	6,831 59	5,538 71	2,381 00	2,081 36	33,558 04	153,580 33
General Account.	225 00							85 00	310 00

## SUMMARY

Nova Scotia	6,181 95	2 84	189 12	801 73	338 18	103 03	96 99	160 86	10,189 53
Prince Edward Island	1,086 66		29 48	40 00	30 02	7 96	44 95	75 63	1,483 72
New Brunswick	6,406 61			52 11	461 30	53 58	57 69	744 25	9,221 44
Manitoba	9,896 36	2,607 40	39 52	17 60	381 87	864 83	371 08	242 75	21,519 12
British Columbia	76,413 09	2,394 56	6,440 17	6,831 59	5,538 71	2,381 00	2,081 36	33,558 04	153,580 33
General Account	225 00							85 00	310 00
	100,209 67	5,004 80	6,698 29	7,743 03	6,750 08	3,410 40	2,652 07	34,866 53	196,304 14



## DETAILED STATEMENT OF EXPENDITURE—FISHERIES PROTECTION SERVICE, 1924-1925

Establishments and Accounts	Paylist \$ cts.	Board or Prov'n. \$ cts.	Fuel \$ cts.	Repairs		Supplies				Clothing \$ cts.	Sundry \$ cts.		— \$ cts.	Total \$ cts.
				Hull \$ cts.	Engine \$ cts.	Engine \$ cts.	Deck \$ cts.	Stewards \$ cts.						
<i>Eastern Division—</i>														
“Arleux”	18,800 23	3,961 94	7,064 81	1,986 79	2,568 50	906 62	530 32	520 96		1,708 94	1,172 37			39,251 48
“Arras”	19,224 23	5,162 19	9,554 15	3,014 68	2,327 22	1,166 84	660 80	992 36		1,602 47	1,324 02			45,028 96
	38,024 46	9,124 13	16,618 96	5,001 47	4,925 72	2,073 46	1,191 12	1,513 32		3,311 41	2,496 39			84,280 44
<i>Western Division—</i>														
“Givenchy”	24,475 78	6,082 73	9,832 61	6,400 55	697 09	950 60	497 59	1,105 33		1,535 32	1,200 00			52,778 60
“Malaspina”	29,709 56	6,865 22	15,554 51	6,598 35	1,772 59	813 30	597 81	1,039 11		1,832 57	2,025 18			66,868 20
	54,245 34	12,947 95	25,388 12	12,998 90	2,469 68	1,764 41	1,094 89	2,144 44		3,367 89	3,225 18			119,646 80
General Account											119 83			119 83

## SUMMARY

Eastern Division,	38,024 46	9,124 13	16,618 96	5,001 47	4,925 72	2,073 46	1,191 12	1,513 32	3,311 41	2,496 39				84,280 44
Western Division,	54,245 34	12,947 95	25,388 12	12,998 90	2,469 68	1,764 41	1,094 89	2,144 44	3,367 89	3,225 18				119,646 80
General Account,	92,269 80	22,072 08	42,007 08	18,000 37	7,395 40	3,837 87	2,286 01	3,657 76	6,679 30	5,841 40				204,047 07

## DETAILED STATEMENT OF EXPENDITURE, FISH CULTURE, 1924-25

Hatcheries	Salaries	Maintenance	Total of Hatchery	Total of Provinces
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia</i> .....	1,275 00	9,702 90	10,977 90	32,467 75
Bedford.....		961 69	961 69	
Lindloff.....	3,600 00	3,272 40	6,872 40	
Margaree.....	377 42	3,945 48	4,322 90	
Margaree Pond.....	2,460 00	3,560 27	6,020 27	
Middleton.....	1,220 00	2,092 59	3,312 59	
Windsor.....				
<i>Prince Edward Island</i> .....	2,745 00	2,402 60	5,147 60	5,147 60
Kelly's Pond.....				
<i>New Brunswick</i> .....	2,565 00	1,538 22	4,103 22	46,096 12
Grand Falls.....	2,940 00	3,035 71	5,975 71	
Miramichi.....		2,930 56	2,930 56	
Miramichi Pond.....		1,095 98	1,095 98	
Nepisiquit.....	709 90	3,995 97	4,705 87	
New Mills Pond.....	2,820 00	3,417 23	6,237 23	
Restigouche.....	260 81	569 78	830 59	
Sparkle.....	2,730 00	6,468 76	9,198 76	
St. John.....		10,660 73	10,660 73	
St. John Pond.....		357 47	357 47	
Tobique.....				79,471 88
<i>Ontario</i> .....	2,940 00	8,043 97	10,983 97	
Collingwood.....	4,050 00	9,019 67	13,069 67	
Kenora.....	3,940 00	4,687 04	8,627 04	
Kingsville.....	2,520 00	3,585 18	6,105 18	
Port Arthur.....	3,868 55	4,533 13	8,401 68	
Sarnia.....	2,439 29	6,893 34	9,332 63	
Southampton.....	5,460 00	9,824 45	15,284 45	
Thurlow.....	4,050 00	3,617 26	7,667 26	
Warton.....				25,646 64
<i>Manitoba</i> .....	941 29	1,241 78	2,183 07	
Dauphin River.....		1,456 18	1,456 18	
Dapuhin River Spawn Camp.....	2,130 00	7,521 88	9,651 88	
Gull Harbour.....	2,130 00	10,225 51	12,355 51	8,505 56
Winnipegosis.....				
<i>Saskatchewan</i> .....	2,640 00	5,865 56	8,505 56	5,279 71
Qu'Appelle.....				
<i>Alberta</i> .....	2,480 00	1,931 61	4,411 61	
Banff.....		50 20	50 20	
Jasper Park.....		817 90	817 90	
Spray Lakes.....				124,025 49
<i>British Columbia</i> .....	7,302 42	3,646 28	10,948 70	
General Account.....	2,574 17	5,944 68	8,518 85	
Anderson Lake.....	1,836 03	6,644 31	8,480 34	
Babine Lake.....	2,359 33	4,516 72	6,876 05	
Cowichan Lake.....	699 86	5,018 84	5,718 70	
Cultus Lake.....	320 65	193 23	513 88	
Cranbrook Eyeing Station.....		3,155 16	3,155 16	
Fifteen Mile Creek.....	254 67	2,719 53	2,974 20	
Gerrard Lake.....	4,395 80	4,577 55	8,973 35	
Harrison Lake.....	2,559 78	4,890 76	7,450 54	
Kennedy Lake.....	255 00	937 33	1,192 33	
Lloyd's Creek Eyeing Station.....	647 50	2,592 90	3,240 40	
Nelson Eyeing Station.....	4,392 42	5,256 01	9,648 43	
Pemberton Lake.....	1,087 19	6,028 76	7,115 95	
Pitt Lake.....	2,409 68	20,480 83	22,890 51	
Rivers Inlet.....	2,323 39	8,841 29	11,164 68	
Skeena River.....	1,440 00	3,723 42	5,163 42	
Stuart Lake.....	6,500 71	13,856 20		20,356 91
<i>General Account</i> .....				

## SUMMARY

Nova Scotia.....	8,932 42	23,535 33	32,467 75
Prince Edward Island.....	2,745 00	2,402 60	5,147 60
New Brunswick.....	12,025 71	34,070 41	46,096 12
Ontario.....	29,267 84	50,204 04	79,471 88
Manitoba.....	5,201 29	20,445 35	25,646 64
Manitoba.....	2,640 00	5,865 56	8,505 56
Saskatchewan.....	2,480 00	2,799 71	5,279 71
Alberta.....	34,857 89	89,167 60	124,025 49
British Columbia.....	6,500 71	13,856 20	20,356 91
General Account.....			
	104,650 86	242,346 80	346,997 66





## APPENDIX 3.

REPORT ON FISHWAYS AND REMOVAL OF OBSTRUCTIONS, BY  
CHARLES BRUCE, FISHERIES ENGINEER

The following fishways and dams were inspected by the fisheries engineer during the year:—

## NOVA SCOTIA

1. *Yarmouth Light and Power Co. Ltd., Tusket River.*—The fishway built in 1923 in the dam of the above company proved effective during the season of 1924, and numbers of fish ascended.

During the summer the company made extensive alterations to the dam, diverting the discharge therefrom to another point with the result that the present lower end of the fishway will have to be changed. As the company had not completed its construction last year the changes in the fishway were left in abeyance until the coming summer when conditions can be definitely ascertained.

2. *Clyde Pulp Company, Limited, Clyde River.*—The fishway in the diversion dam on this river was completed in 1923, and resulted in a great improvement over former conditions.

3. *Mersey River, Liverpool County.*—During the summer of 1923 the fishways in the five dams on this river were entirely reconstructed. Results were all that could be hoped for. Adequate proof that salmon ascended was furnished by the fact that in the spring of 1924 about 200 "slink" salmon coming down river were trapped in the flume of one of the pulp mills. Several minor improvements which were found to be necessary were made to the fishways in 1924. The ascent of salmon in 1923 is the first that has occurred for a number of years, as previously the fishways were not effective.

4. *Beaver Dam Brook, Liverpool County.*—During the last summer the channel of this brook was improved by the removal of stone obstructions. Large numbers of alewives ascend this brook and the young were being destroyed by reason of the obstructions.

5. *Medway River, Pulp Mill Dam.*—The fishway in this dam operated very effectively during the season. An instance worthy of note is that shad ascended the river by the fishway in considerable numbers, the first that have been observed by the inspector. The undersigned saw about one hundred of them above the dam on their return to the sea during an inspection in July.

6. *Petite Riviere, Lunenburg County.*—Improvements made to the several fishways on this river in the spring of 1924 resulted in their being rendered effective for the ascent of fish.

7. *Lahave River, Lunenburg County.*—Improvements were made to the fishways in both the first and second dams on the river in 1923. During the season of 1924 salmon were seen some miles above these dams.

8. *Sheet Harbour, East River, Halifax County.*—The fishway in the Malay falls hydro-electric development, built in 1923, proved effective, and during the summer of 1924 numbers of salmon ascended. This fishway overcomes a total head of about 50 feet.

During the season of 1924 the Nova Scotia Power Commission proceeded with a second power development on this river below the Malay falls at what is

known as Ruth falls. The total head at this plant will be approximately 110 feet, which is developed by a dam some forty or fifty feet high, and a canal along the bank of the river nearly a mile in length. In order to secure the maximum power the storage has been so arranged that there will be scarcely any overflow from the dam and none at all during the summer. The river bed between the foot of the dam and the tailraces, a distance of about a mile, will as a consequence of the above be dry.

After an examination of all the conditions it was decided that the construction of a fishway would be impracticable, and it was accordingly decided to abandon this river. The West river, which flows into the same estuary, is still open for salmon, and it is thought probable that the East river run may ascend this water for spawning.

9. *North River, Victoria County.*—An examination was made of a falls 12 feet high on this river. The work involved will be the blasting out of rock at the head of the falls in order to improve the passage for salmon, which it is proposed to have done during the coming summer.

10. *Nictaux River, Annapolis County.*—Plans for fishways in the two dams on this river were served on the town of Middleton. Construction will not be completed until the coming summer.

#### NEW BRUNSWICK

11. *Mispec River, St. John County.*—Repairs were made to the fishway in the dam at the St. John city reservoir, involving new partitions. The walls of this fishery are of concrete.

12. *Nashwaak River, York County.*—The fishway built the previous year was only partially effective. The situation at this dam is a difficult one as the river below is entirely ledge rock practically level, and without any area of pools from which salmon could be led into a fishway. I suggested some improvements on my last inspection. Owing to the lateness of the season these could only be temporarily arranged but served to make the fishway fully effective. Some improvements were made to the fishway in the dam on this river at Stanley.

13. *Salmon River, Victoria County.*—Arrangements were completed and a new fishway built in the dam owned by Joseph Cote. The department extended and repaired the fishway in the Terrialt dam. In the two dams owned by the Davis Lumber Company repairs and extensions were carried out in the first and a new fishway built in the second one.

#### PRINCE EDWARD ISLAND

Surveys were conducted at dams on the Dunk, Morell, Wheatley, West and New Glasgow rivers, with a view to having fishways built to admit the ascent of salmon and sea trout. The former fish ascend the first two named rivers in some numbers, while sea trout run in practically all the larger streams on the island. As these dams have existed for a large number of years, some of them for several generations, and have never been required to install fishways, it was felt that none should be required unless the owners were agreeable. As a result of a conference with the various owners it is proposed next year to build fishways in the Dunk, Morell and New Glasgow rivers.

#### MANITOBA

*Whitemud River.*—Repairs were made to the fishways in the dams at Gladstone and Westbourne.

Both were inspected at a time when fish were ascending, and the latter found to be effective.



There is no evidence that the Gladstone one is not effective, although the overseer did not see any fish go through it.

Last spring at the time the fish were running, the river was high and large numbers went past the dams, but whether they used the fishways or were able to swim directly over the dams could not be ascertained. It will be impossible to obtain further information until the run of fish takes place this coming spring.

### BRITISH COLUMBIA—REPORT OF J. McHUGH, Resident Engineer.

This report covers all the work performed under the superintendence of the engineers during the calendar year, and is again segregated under four separate headings, as follows:—

(1) Removal of obstructions to the ascent of fish in streams and the construction and maintenance of fishways.

(2) New construction and repairs to buildings at hatcheries, and local headquarters for fishery officers.

(3) Surveys, both instrumental and otherwise, in connection with the location and development of hatchery sites and spawning areas.

(4) General advisory work and the preparation of maps, plans and other data.

It will be noted that the actual expenditure in connection with the removal of obstructions is somewhat lighter than it has been in former years. Closer investigation of conditions, coupled with a wider knowledge of the requirements of this branch of the work has been of considerable assistance in analysing the various situations that have been, and are being met with from time to time.

It is also pleasing to note that as a result of the activities of the department in this branch of the work, logging operators are realizing that the depositing of refuse in streams will not be tolerated. Portions of two streams which were badly obstructed by loggers have this year been cleared at their own expense.

The obstructions dealt with during the year have consisted mainly of debris from logging operations and accumulations of rubbish from freshets which, from time to time, carry enormous quantities of logs and roots from upper waters to lodgment in those portions of stream beds in which the velocity of the stream is lightest.

The streams requiring the largest expenditure, and the amount spent on them during the past season, are as follows:—

Owen bay.....	\$854 26
Big Qualicum river.....	749 45
French creek.....	295 75
Call creek.....	474 00
Rosewall creek.....	130 00
Quatsi river.....	108 00
Koeye river.....	107 49

Of these streams, the Koeye river only requires special mention. At the foot of Koeye lake, the discharge enters the Koeye river over a fall probably thirty feet in height. The fall is divided naturally into two parts, that on the right hand being quite steep and totally impassible for salmon, and that on the left being more gradual and the route chosen by the fish when passing into the lake. A rocky point, being a continuation of the dividing line between the two falls, extends down stream a distance of probably a hundred feet or more, forming a pool at the base of the impassable fall in which fish collected in large numbers and destroyed themselves in their effort to surmount the obstacle. The first inclination to relieve the situation was to construct a low rock-filled timber dam at the head of the steep fall for the purpose of diverting all the head of the water over the passable fall, thus leaving the impassable fall dry.



This scheme was, however, later amended by the construction of a low wall of boulder rocks from three to five feet in height, built in the river bed below the fall from the point of the projecting ledge to the right bank of the stream. Bearing in mind the fact that during the salmon runs the discharge from the lake is comparatively light, this rock wall becomes a lead, guiding ascending fish into the proper channel, though at high water it will be completely submerged. This work cost considerably less money than the diversion would have cost, and is apparently quite satisfactory.

Smaller obstructions were likewise removed from the following streams, none of which, however, requires particular comment:—

Sucker creek,	Gates creek,
Schooner Passage,	Lardo river,
Salmon river,	Waskasco creek,
Capilano river,	Birkenhead river,
Owl creek,	Seymour creek,
Bella Coola river,	Little Qualicum river,
Skutz falls,	Wilson creek,
Deep Bay creek,	Oyster river,
Sproat falls,	Knouf lake.
Nimpkish river,	

There has been no further requirement during the year to the fishladders in the province, though consideration is, at the present time, being given to the question of reconstruction of the fishladder in the Adams River dam.

The greater proportion of the engineers' time during the season under review has been devoted to work in connection with repairs and additions to hatchery establishments and other fish cultural work, and to construction work in connection with the Biological Station at Departure Bay, the proposed new Biological Station at Prince Rupert, the new warehouse and marine ways at Poplar Island, and the new fishery overseer's wharf and quarters at Schooner Passage, Rivers inlet. While the two latter works were constructed under contracts awarded by the Public Works Department, the original plans and actual work in connection therewith were prepared by the department's own engineering staffs.

The following hatcheries were visited and the works as detailed performed during the year under review:—

*Pitt Lake Hatchery.*—The new hatchery at this point was completed during the year, and is proving very satisfactory, the greatly increased accommodation providing for what, so far, is the largest collection of sockeye eggs ever obtained at this point. The hatchery building, whilst built very substantially of hewn logs and roofed with shakes, was constructed at a very low cost—slightly less than \$3,000, and the cost of maintenance, on account of style of construction will be very light.

Heavy freshets during the month of January caused damaging floods in the vicinity of the hatchery, and it became necessary to do considerable work renewing that portion of the bed of Four Mile creek in the immediate vicinity of the hatchery, and to protect the banks with cribbing and riprap. A portion of the main road, about one thousand feet in length, south of the hatchery, which was completely demolished by floods two or three years previously, was restored by rebuilding on the edge of the rock bluff, thus affording a permanent roadway. This roadway at the edge of the bluff, is intersected by a channel which only fills at freshet time. This channel was partially filled with broken rock from the bluff, but it is feared that more work will, at some future date, have to be done here to give any degree of permanence to this portion.

*Rivers Inlet Hatchery.*—Extensive repairs and additions were performed at this establishment during the year. The repairs consisted of the entire

replacement of the foundations and floors of the hatchery building, and the construction of an entirely new equipment of troughs. The extensions consisted of the construction of a suite of rooms, dining and living rooms, three bedrooms and bath room, in the hatchery building on the second floor in the unused end of the building. This construction provides very suitable and comfortable living quarters for the officer in charge, and released the rooms formerly occupied by him for the remainder of the staff. Two additional rooms were also constructed at the same time for another of the married staff.

The extent of this work required a revision of transportation facilities, and considerable work was done on the trail in order to render it more readily passable for a one-ton Ford truck. This work resulted in haulage costs being cut down very considerably.

The total cost of the work at Rivers Inlet hatchery was slightly under seven thousand dollars.

*Skeena River Hatchery.*—All the buildings were painted both inside and out to conform with the new colour standard adopted by the department.

*Pemberton Hatchery.*—The main buildings were newly painted during the year. For the purpose of providing an alternative water supply to the hatchery, a survey was made with this end in view, and plans and estimates prepared for a supply from the Birkenhead river. The proposed new pipeline will be approximately three thousand (3,000) feet in length, and will provide an entirely independent supply.

*Cowichan Lake Hatchery.*—The buildings and fences were newly painted during the year.

*Harrison Lake Hatchery.*—The hatchery and mess house were newly painted during the year.

*Anderson Lake Hatchery.*—The residence of the officer in charge was raised a distance of two and one half feet in order to clear the floors, which, when the water was unusually high, were at times submerged.

*Kennedy Lake Hatchery.*—Considerable repairs were effected during the year, both roofs and foundations of the building having been thoroughly repaired. The interior of the hatchery building was repainted and fifteen hatching troughs replaced.

*Babine Lake Hatchery.*—New sills and a new floor provided in the hatchery building during the year, and it will be necessary during the coming season to do considerable work on the foundations of this building.

In addition to all the foregoing a considerable amount of work has been performed on the district maps which are being kept up to date and extended.

## APPENDIX 4

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1924.

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Actor.....	7	3	1	Sell fish.....	60
Adeline.....	6	2	1	" ".....	300
Akutan.....	46	14	8	Orders, sell fish.....	
Alaska.....	44	15	1	Sell fish.....	2,360
Albatross.....	40	13	5	Bait, sell fish, ice.....	740
Agnes.....	17	5	3	Sell fish, bait, ice.....	60
Alfa.....	12	5	6	Bait, ice.....	
Alco.....	37	7	1	Stores.....	
Alice.....	15	7	1	Bait, ice.....	
Alice B.....	13	5	8	Sell fish, bait, ice.....	200
Aloha.....	19	6	2	Sell fish, stores.....	460
Alten.....	43	15	1	Sell fish.....	3,960
American.....	25	13	5	Bait, ice.....	
Anna J.....	22	6	2	Sell fish, bait, ice.....	2,060
Antler.....	22	5	4	Bait, sell fish, ice.....	340
A. R. B.....	11	5	1	Stores.....	
Arcade.....	14	5	10	Bait, ice.....	
Arctic.....	29	6	1	Sell fish.....	1,720
Arro.....	15	3	1	Bait.....	
Atlantic.....	25	11	1	Sell fish.....	1,620
Atlas.....	31	7	1	" ".....	1,440
Augusta.....	19	5	1	" ".....	940
Aurora.....	16	5	8	Bait, ice.....	
Avona.....	9	3	1	Sell fish.....	100
Baltic.....	20	4	1	Sell fish.....	780
Baltimore.....	20	8	1	Bait and ice.....	
Beaver.....	17	5	8	Bait.....	
Bernice.....	4	2	1	Sell fish.....	60
Blue Bird.....	4	2	1	" ".....	20
Bonanza.....	30	6	1	" ".....	2,280
Bravo.....	10	3	1	" ".....	520
Brisk.....	37	7	3	Sell fish, bait and ice.....	2,460
Brothers.....	13	4	1	Sell fish.....	840
California.....	20	5	8	Sell fish, bait and ice.....	300
Cape Clear.....	14	5	12	Sell fish, bait and ice, orders.....	280
Carolene.....	18	6	1	Sell fish.....	400
Caroline.....	5	5	1	Water.....	
Cascade.....	7	2	2	Bait and ice.....	
Cédric.....	19	5	1	Sell fish.....	1,120
Chancellor.....	13	5	4	Sell fish, bait and ice.....	640
Chimera.....	9	3	8	Bait and ice.....	
Columbia.....	70	11	1	" ".....	
Columbia.....	41	8	1	Sell fish.....	3,000
Commonwealth.....	60	17	1	" ".....	2,140
Constitution.....	39	14	3	Sell fish, bait and ice.....	1,360
Cora.....	4	2	1	Sell fish.....	80
Corona.....	19	11	8	Bait, ice.....	
Crescent.....	8	4	3	Sell fish, bait and ice.....	640
Curlew.....	18	5	6	Bait, ice, orders.....	
Daily.....	26	6	2	Sell fish, bait and ice.....	2,740
Defence.....	20	5	1	" ".....	880
Democrat.....	27	6	1	" ".....	1,680
Discovery.....	10	4	10	" ".....	180
Diver.....	4	2	3	" ".....	40
Doll II.....	4	1	1	" ".....	
Dora H.....	15	5	7	Bait, ice.....	
Dubrovick.....	24	4	1	Sell fish.....	60
Eagle.....	67	16	2	" ".....	5,920
Eastern Point.....	4	3	1	" ".....	720
Edith.....	4	2	1	Bait.....	



List of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1924.—Continued.

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
Eidsvold	15	5	3	Sell fish, bait.	cwt.
Eleanora	16	5	3	Bait.	1,220
Emblem	4	3	1	Sell fish.	120
E. Neilson	15	4	1	"	1,320
Enterprise	8	3	10	Bait and ice.	
Escapade	17	4	1	Water.	
Eureka	11	4	3	Bait and ice, orders.	
Evolution	17	5	11	Sell fish, bait and ice, orders.	240
Fairway	19	5	3	Sell fish, bait and ice.	240
Faith	7	3	6	"	160
F. C. Hergert	15	5	8	Bait and ice.	
Flamingo	13	5	4	"	
Flattery	19	5	1	Sell fish.	580
Foremost	66	15	1	"	1,680
Fortuna	21	5	8	" bait and ice.	60
Forward	18	5	3	"	1,120
Freia K945	4	2	1	In transit.	
Fremont	10	4	7	Sell fish, bait and ice.	186
Galveston	21	2	1	Bait.	
Genevive	4	2	1	Sell fish.	100
George T	6	2	1	Water.	
Glacier	12	4	1	Sell fish.	740
Gladstone	23	6	1	"	1,980
Gladys	11	3	1	"	740
Goney	12	5	6	Sell fish, bait and ice, repairs, orders	740
Grayling	16	5	1	Sell fish.	520
Gretchen	7	3	12	Sell fish, bait and ice, water.	120
Groth	10	4	1	Sell fish.	960
Hanna	11	5	8	Bait and ice, orders.	
Happy	12	4	1	Sell fish.	360
Harding	19	5	6	Sell fish, bait and ice.	580
Harvester	15	5	7	Bait and ice.	
Hazel	7	3	1	Sell fish.	140
Hazel H.	24	5	5	Bait and ice.	
Helgeland	57	15	1	Sell fish.	4,440
Henry J.	19	5	2	Bait and ice.	
Hi Gill	11	4	1	Sell fish.	200
Hilda	10	3	1	"	80
Hillside II	28	8	1	Bait and ice.	
Imp.	5	1	1	Supplies.	
Imperial	35	5	3	Sell fish, orders.	1,160
Ira	11	5	1	Ice and stores.	
Irene	8	3	3	Bait and ice.	
Ithona	20	6	7	Sell fish, bait and ice.	20
I.U.A.J.	9	3	1	In transit.	
Ivanhoe	27	6	2	Sell fish, bait and ice.	560
Jennie	16	5	5	Bait, ice, supplies.	
Jennie F. Decker	16	5	16	Sell fish, bait, stores, ice.	120
J. P. Todd I.	4	2	1	Sell fish.	380
J. P. Todd II.	12	5	1	"	140
Judith	5	3	5	Bait.	
Juliett	6	1	1	Bait and ice.	
June	15	5	1	Sell fish.	580
K. 78.	4	2	1	"	
K. 365.	4	1	1	Bait and ice.	
K. 447.	5	2	1	"	
K. 512.	5	2	1	"	
Kanatak	39	7	1	Sell fish.	3,200
Kodiak	38	13	8	Sell fish, bait and ice, orders.	1,980
Katy	4	3	2	Sell fish, bait and ice.	
Kattalla	16	5	6	"	280
L. 718.	5	2	1	Bait and ice.	
Lancing	16	4	1	Sell fish.	580
La Paloma	14	11	7	Bait, ice.	
Laura	7	3	1	Sell fish.	60
Lebanon	14	5	8	Sell fish, bait and ice.	140
Lena	6	3	1	Ice and stores.	
Liberty	44	15	4	Sell fish, bait and ice.	1,800
Lincoln	23	6	1	"	1,920
Lincoln	4	3	1	"	200
Liyuya	30	7	2	"	1,880

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1924.—*Continued.*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
Lonhelen.....	11	3	1	In transit.....	
Louisa.....	16	5	13	Bait, ice.....	
Louise.....	5	1	1	Supplies.....	
Lummen.....	10	4	1	Sell fish.....	460
Lyra.....	4	1	1	Shelter.....	
M. 819.....	5	2	1	Bait and ice.....	
Madeline J.....	21	5	11	Sell fish, bait and ice.....	240
Majestic.....	33	7	1	".....	2,240
Mankato.....	8	3	2	Bait and ice.....	
Marian.....	4	2	1	Sell fish.....	
Mariner.....	21	5	5	Sell fish, bait and ice, orders.....	680
Mars.....	9	4	1	Shelter.....	
Mary.....	16	8	18	Bait and ice.....	
Mary B.....	22	7	1	".....	
Maud Hazel.....	9	4	1	Sell fish.....	
Mecca.....	6	3	1	".....	100
Mermaid.....	19	5	9	" bait and ice.....	240
Middleton.....	24	6	1	".....	1,600
Mildred.....	19	5	8	Bait and ice.....	
Mildred II.....	12	5	1	".....	
Mildred II.....	31	6	2	Sell fish, bait.....	1,800
Mira.....	7	3	1	".....	80
Myrtle.....	9	3	6	Bait and ice.....	
National.....	20	6	6	Sell fish, bait and ice.....	960
Neptune.....	43	13	3	".....	780
New England.....	70	16	3	" overhaul.....	2,480
Nomad.....	15	5	8	" bait and ice.....	100
Norland.....	19	6	1	".....	260
Norma.....	6	3	3	" bait and ice.....	680
North.....	9	3	9	".....	1,400
Omaney.....	34	13	1	".....	3,420
Onah.....	18	5	3	" bait and ice.....	1,440
Orient.....	48	13	1	".....	2,120
Panama.....	34	15	5	" bait and ice.....	1,840
Pelican.....	17	5	1	".....	1,360
Pershing.....	18	5	10	Bait, ice.....	
Pioneer.....	48	13	1	Sell fish.....	1,440
Pioneer III.....	26	5	7	" bait and ice.....	2,840
Polaris.....	45	15	1	".....	2,640
Portlock.....	36	8	1	".....	1,320
Presho.....	14	5	7	" bait and ice.....	380
President.....	24	6	2	".....	2,320
Princess Pat.....	27	3	1	Bait and ice.....	
Prosperity.....	25	6	2	Sell fish, bait and ice.....	1,200
Puffin.....	18	4	1	Water.....	
Radio.....	63	15	1	Sell fish.....	3,760
Rainbow.....	4	2	1	".....	
Ranier.....	39	6	1	".....	3,860
Ranier.....	4	3	1	".....	740
Raven.....	4	2	1	".....	20
Reliance.....	18	4	1	".....	1,480
Reliance.....	14	4	1	".....	100
Reliance.....	11	3	3	" water.....	880
Reliance.....	8	3	2	" bait and ice.....	1,100
Republic.....	51	15	1	".....	3,880
Resolute.....	47	13	2	".....	3,660
Restitution.....	24	5	2	Bait and ice.....	
Roald Amundsen.....	16	6	1	Sell fish.....	1,800
Rosita.....	8	5	1	Stores and ice.....	
Rosario.....	16	5	12	Bait and ice.....	
Royal.....	15	5	8	Sell fish, bait and ice, orders.....	420
Roosevelt.....	13	5	13	Bait and ice.....	
Ruth, M.....	5	1	4	Supplies.....	
Sadie K.....	13	5	2	Sell fish, bait and ice.....	1,300
Sammy.....	8	3	3	Bait.....	
Scandia.....	79	17	1	Sell fish.....	4,740
Seattle.....	55	16	5	" bait and ice.....	2,080
Senator.....	11	6	1	".....	2,260
Sentinel.....	21	6	1	".....	1,720
Seymour.....	44	15	2	" bait and ice.....	3,660
Sherman.....	18	5	1	".....	1,520

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1924.—*Continued.*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Sirius.....	17	4	1	Sell fish.....	280
Sitka.....	50	15	1	".....	2,720
Spencer.....	17	5	3	Water, orders.....	
Spray.....	20	5	5	Sell fish, bait and ice.....	420
Star.....	12	4	1	".....	220
Star.....	7	3	12	" bait and ice, stores.....	280
Summer.....	34	15	2	Sell fish, bait and ice.....	3,800
Sunset.....	37	7	1	".....	3,860
Sun Wing.....	15	4	1	".....	120
Superior.....	26	6	1	".....	1,820
Superior.....	18	5	10	Bait.....	
Swan.....	9	4	7	Bait and ice, sell fish, orders.....	60
T. 915.....	4	2	1	Sell fish.....	40
Tahoma.....	18	7	2	" bait and ice.....	2,120
Taku II.....	10	3	1	".....	
Tars.....	28	13	1	Bait and ice.....	
Tatoosh.....	21	6	2	Sell fish.....	1,740
Tatoosh.....	7	1	4	Bait and ice.....	
Teddy J.....	13	4	1	Sell fish.....	940
Texas.....	16	5	10	" bait and ice.....	160
Thelma II.....	26	5	6	" ".....	240
Tillikum.....	21	5	12	" " stores.....	420
Tom & Al.....	57	15	2	Sell fish, bait and ice.....	1,500
Toss.....	28	9	1	Stores.....	
Trio.....	19	5	2	Sell fish, water.....	60
Tyee.....	12	4	1	".....	740
Tordenskjold.....	39	13	4	" bait and ice.....	2,120
Unimak.....	22	5	9	Bait and ice.....	
Urania.....	27	6	1	Sell fish.....	320
Uranus.....	15	5	3	" bait and ice.....	1,100
Valid.....	8	3	6	Sell fish, bait and ice, water.....	80
Valorous.....	21	5	2	" ".....	1,520
Vansee.....	58	16	1	".....	3,380
Velero.....	6	2	8	Bait and ice.....	
Velva.....	6	3	4	".....	
Venus.....	25	7	1	Sell fish.....	2,600
Venus.....	23	7	1	Bait and ice.....	
Venus.....	4	3	1	Sell fish.....	960
Vesta.....	13	5	2	" bait and ice.....	1,100
Viking.....	11	4	1	".....	420
Virginia.....	33	6	1	".....	600
Volunteer.....	19	7	8	".....	1,115
Wabash.....	6	3	1	Sell fish.....	820
Washington.....	15	4	2	" bait and ice.....	680
Wave.....	7	3	2	" ".....	440
Western.....	41	7	1	".....	2,960
Wesley.....	9	3	10	Bait and ice.....	
White Star.....	17	4	2	Sell fish, bait and ice.....	450
Wilhelmina.....	17	5	10	Bait and ice.....	
Wilson.....	19	5	7	Sell fish, bait and ice.....	600
Wireless.....	19	5	2	" ".....	940
Wizard.....	49	8	1	".....	2,700
Woodrow.....	23	5	5	" ".....	440
Westford.....	17	5	7	" ".....	600
Yakutat.....	41	13	9	" ".....	1,180
Yellowstone.....	22	6	2	" ".....	1,160
Yukon.....	31	6	1	".....	920
Young America.....	22	6	1	".....	820



## APPENDIX 5.

The following is a statement of the different kinds of licenses issued by the different inspectors, during the 1924-25 season:

## MAGDALEN ISLANDS, QUEBEC—Inspector S. T. GALLANT

Kind of Licenses—	Number of Licenses Issued
Lobster fishing licenses.....	524
Lobster packing licenses.....	20
Lobster packing extensions—10.....	
Herring trap-net licenses (No. 52 cod trap-net).....	22
Herring seine licenses.....	24
Smelt bag-net licenses.....	1
	<hr/> 591

## PRINCE EDWARD ISLAND—Inspector S. T. GALLANT

Lobster fishing licenses.....	2,164
Lobster packing licenses.....	149
Lobster packing extensions—53.....	
Oyster fishery licenses.....	252
Quahaug fishery licenses.....	2
Fish cannery licenses.....	5
Certificates under Sec. 63—5.....	
Trap-net licenses.....	3
Smelt gill-net licenses.....	314
Smelt bag-net licenses.....	281
	<hr/> 3,170

## NOVA SCOTIA—DISTRICT No. 1—Inspector A. G. McLEOD

Lobster fishing licenses.....	2,049
Lobster packing licenses.....	48
Lobster packing extensions—11.....	
Oyster fishery licenses.....	114
Fish cannery licenses.....	4
Certificates under Sec. 63—57.....	
Trap-net licenses.....	46
Salmon gill-net or drift-net licenses.....	28
Salmon trap-net, pound-net or weir.....	157
Angling permits.....	57
Lobster pound certificates—5.....	
Smelt gill-net licenses.....	296 (45 cancelled)
Smelt bag-net licenses.....	54
Lobster pound licenses.....	1
	<hr/> 2,854 (45 cancelled)

## NOVA SCOTIA—DISTRICT No. 2—Inspector D. H. SUTHERLAND

Lobster fishing licenses.....	2,784 (1 cancelled)
Lobster packing licenses.....	66
Lobster packing extensions—16.....	
Oyster fishery licenses.....	95
Fish cannery licenses.....	5
Shad gill-net or drift-net licenses.....	20
Certificates under Sec. 63—108.....	
Seine licenses.....	201
Herring weirs.....	17
Trap-net fishing licenses.....	138
Salmon gill-net or drift-net licenses.....	302
Salmon trap-net, pound-net or weir.....	133
Angling permits.....	42
Lobster pound certificates—464 (1 cancelled).....	
Smelt gill-net licenses.....	336 (1 cancelled)
Smelt bag-net licenses.....	236
Scallop fishery licenses.....	6
Lobster pound licenses.....	4
	<hr/> 4,385 (2 cancelled)

## NOVA SCOTIA—DISTRICT No. 3—Inspector H. H. MARSHALL

Kind of Licenses— <i>Continued</i>	Number of Licenses Issued
Lobster fishing licenses.....	3,064 (1 cancelled)
Lobster packing licenses.....	29
Lobster packing extensions—13.....	
Shad gill-net or drift-net licenses.....	2
Fish cannery licenses.....	8
Certificates under Sec. 63—151 (1 spoiled).....	
Herring weir licenses.....	77 (1 cancelled)
Trap-net licenses.....	205
Salmon net permits (Medway R.).....	12
Angling permits.....	374 (1 destroyed)
Salmon gill-net or drift-net licenses.....	239
Salmon trap-net, pound-net or weir.....	63
Lobster pound certificates—100 (1 cancelled).....	
Smelt gill-net licenses.....	89
Smelt bag-net licenses.....	39
Scallop fishery licenses.....	191 (10 cancelled)
Lobster pound licenses.....	8
Lease of Long Beach pond—1.....	
	<hr/> 4,400 (12 cancelled and 1 destroyed)

## NEW BRUNSWICK—DISTRICT No. 1—Inspector J. F. CALDER

Lobster fishing licenses.....	589
Shad gill-net or drift-net licenses.....	53
Fish cannery licenses.....	7
Certificates under Sec. 63—5.....	
Clam permits.....	115
Salmon gill-net or drift-net licenses.....	76
Herring seine licenses.....	Nil
Lobster pound certificates—24.....	
Smelt gill-net licenses.....	1
Smelt bag-net licenses.....	Nil
Scallop fishery licenses.....	27
Lobster pound licenses.....	3
Lease of Dark Harbour—1.....	
Herring weir licenses.....	619
	<hr/> 1,490

## NEW BRUNSWICK—DISTRICT No. 2—Inspector A. L. BARRY

Lobster fishing licenses.....	2,150
Lobster packing licenses.....	143
Lobster packing extensions—48.....	
Oyster fishery licenses.....	700
Quahaug fishery licenses.....	138
Shad gill-net or drift-net licenses.....	23
Fish cannery licenses.....	2
Certificates under Sec. 63—169.....	
Herring weir licenses.....	Nil
Salmon net permits.....	39
Gaspereau pound-net or trap-net.....	28
Salmon gill-net or drift-net licenses.....	55
Salmon trap-net, pound-net or weir.....	369
Lobster pound certificates—450.....	
Smelt gill-net licenses.....	199
Smelt bag-net licenses.....	4,653
Scallop fishery licenses.....	Nil
Lobster pound licenses.....	7
Bass fishery licenses.....	130
	<hr/> 8,636

## NEW BRUNSWICK—DISTRICT No. 3—Inspector H. E. HARRISON

Shad gill-net or drift-net licenses.....	221
Sturgeon fishery licenses.....	12
Whitefish fishery licenses.....	1
Salmon net permits.....	119
Salmon gill-net or drift-net licenses.....	110
Smelt gill-net licenses.....	6
Smelt bag-net licenses.....	1
Bass fishery licenses.....	12
	<hr/> 482

## MANITOBA—Inspector J. B. SKAPTASON

Kind of Licenses— <i>Continued</i>	Number of Licenses Issued
Commercial sturgeon fishery licenses.....	215
Domestic sturgeon fishery licenses.....	13
Pound-net licenses.....	22
Special angling permits.....	118
Special fishery licenses.....	2,460 (1 cancelled)
Settler's permits.....	1,031
Receipt books—5.....	

3,859 (1 cancelled)

## SASKATCHEWAN—Inspector G. C. MACDONALD

Commercial sturgeon fishery licenses.....	5
Domestic sturgeon fishery licenses.....	11
Angling permits.....	376
Commercial and fisherman's licenses.....	835 (1 cancelled)
Domestic fishery licenses.....	97 (2 cancelled)
Indian and Halfbreed permits.....	817
Receipt books—51.....	

2,141 (3 cancelled)

## ALBERTA—Inspector R. T. ROBB

Fish cannery licenses.....	Nil
Angling permits.....	3,952 (10 cancelled)
Indian and Halfbreed permits.....	449
Commercial and fisherman's licenses.....	902 (1 cancelled)
Domestic fishery licenses.....	134 (13 cancelled)
Receipt books—469.....	(4 cancelled)

5,437 (24 cancelled)

## YUKON TERRITORY

Special fishery licenses.....	26
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## MODUS VIVENDI LICENSES

Pacific Coast.....	221
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## PROVINCE OF BRITISH COLUMBIA—Inspector J. A. MOTHERWELL

Fish cannery licenses.....	13
Certificate under Sec. 63—Nil.....	
Special angling permits.....	7
Abalone fishery licenses.....	1
Indian permits.....	75
Reduction works licenses.....	7
Salmon fishery licenses.....	3,560
Salmon trolling licenses.....	1,553 (3 cancelled)
Salmon trap-net licenses.....	6
Salmon purse-seine licenses.....	227
Salmon drag-seine licenses.....	32
Capt. salmon seine boat licenses.....	178 (4 cancelled)
Salmon curing licenses.....	64 (3 cancelled)
Salmon cannery licenses.....	62
Boat licenses.....	203 (2 cancelled)
Fish buyer's licenses.....	77 (1 cancelled)
Grayfish fishery licenses.....	143
License to assistant operator of salmon (purse or drag) seine.....	949 (1 cancelled)
License to assistant in a boat used in operating salmon gill-net or drift net.....	1,007
Cod fishery licenses.....	314
Metal tags.....	8
Crab fishery licenses.....	127 (1 cancelled)
Smelt or sardine fishery licenses.....	57
Sturgeon fishery licenses.....	2
Miscellaneous licenses.....	236 (2 cancelled)
Herring or pilchard gill-net or drift net licenses.....	40
Herring drag-seine licenses.....	3
Herring purse-seine licenses.....	39 (1 cancelled)
License to captain of herring seine boat.....	33 (1 cancelled)
Herring curing licenses.....	27
Whale factory licenses.....	3
Counterfoil of pelagic sealing certificates.....	19

9,077 (19 cancelled)

Total..... 46,769 (106 cancelled  
1 destroyed)



The following is a statement of the total number of prosecutions and confiscations that took place during the 1924-25 season:

	Prosecutions		Confiscations	
Prince Edward Island.....		41		15
Nova Scotia No. 1.....	11		26	
“ No. 2.....	29		113	
“ No. 3.....	24	64	38	177
New Brunswick No. 1.....	21		54	
“ No. 2.....	43		121	
“ No. 3.....	41	105	30	205
Manitoba.....		48		105
Saskatchewan.....		93		74
Alberta.....		21		18
British Columbia No. 1.....	49		34	
“ No. 2.....	35		9	
“ No. 3.....	13	97	14	57
		469		651



DOMINION OF CANADA

FIFTY-NINTH

ANNUAL REPORT

OF THE

# FISHERIES BRANCH

Department of Marine and Fisheries

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FOR THE YEAR

1925-26



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1926





*To General His Excellency the Right Honourable Lord Byng of Vimy, G.C.B.,  
G.C.M.G., M.V.O., Governor General and Commander in Chief of the  
Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of your Excellency and the Parliament of Canada, the Fifty-ninth Annual Report of the Fisheries Branch of the Department of Marine and Fisheries.

I have the honour to be,

Your Excellency's most obedient servant,

P. J. A. CARDIN,

*Minister of Marine and Fisheries.*

DEPARTMENT OF MARINE AND FISHERIES,  
OTTAWA, July, 1926.

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## DEPUTY MINISTER'S REPORT

To the Hon. P. J. A. CARDIN,  
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the Fifty-ninth Annual Report of the Fisheries Branch of the Department, which is for the fiscal year ended March 31, 1926.

The report deals with the following subjects:—

- Review of the Fisheries of 1925.
- Operation of the Fish Inspection Act.
- The Inspection of Canneries and Canned Fish.
- Fisheries Intelligence Service.
- Fishing Bounty.
- Fish Culture.
- North American Committee on Fisheries Investigation.
- Pacific Halibut Treaty.
- Marine Biological Board.
- Natural History Observations.

Appendices to the Report include the following:—

- Report of Inspectors of Fisheries.
- Report on Activities of Marine Biological Board.
- Observations on the American Lobster.
- Fishways and Removal of Obstructions.
- Fisheries Expenditure and Revenue.
- Entries of United States Fishing Vessels.
- Summary of Licenses Issued.

### REVIEW OF THE FISHERIES OF 1925

The total production of the fisheries of Canada during the year under review was greater than during the preceding year and the marketed value was almost \$3,500,000 greater.

In the following table will be seen the marketed value by provinces with a comparison of the previous year:—

	1925	1924
Nova Scotia.....	\$ 10,213,687	\$ 8,777,251
New Brunswick.....	4,798,589	5,383,286
Prince Edward Island.....	1,598,119	1,201,772
Quebec.....	3,044,919	2,283,314
Ontario.....	3,436,412	3,557,587
Manitoba.....	1,466,939	1,232,563
Saskatchewan.....	479,645	482,492
Alberta.....	458,504	339,107
British Columbia.....	22,414,618	21,257,567
Yukon Territory.....	15,370	18,773
	<hr/> 47,926,802	<hr/> \$ 44,534,235

The increased value for Nova Scotia of about \$1,500,000 is accounted for by the greatly increased catches in cod and lobsters.

In the province of New Brunswick decreases are noted in the catches of cod, sardines, and smelts, with a corresponding drop in the value.

The catches of cod, herring and lobsters in the province of Prince Edward Island were larger in 1925 and caused the value to be higher.

There was a considerable increase in the catch and value of cod in the province of Quebec, while the salmon and lobster catches were also greater.

In Ontario and Saskatchewan the catches were about the same as in the preceding year, while in Manitoba there were greater catches of whitefish and tullibee. The increase in Alberta was due to greater catches of pickerel, pike and whitefish.

British Columbia shows an increase in value of over a million dollars which is accounted for by a larger catch of herring and an increase in the marketed value of salmon.

#### ATLANTIC COAST

*Cod, Haddock, Hake and Pollock.*—There were 2,872,281 cwts. of these fish taken, compared with 2,433,234 cwts. in 1924. Each of these kinds, with the exception of hake, shows an increased catch in Nova Scotia. In New Brunswick the cod catch shows a decrease, but in the other three kinds an increase. Prince Edward Island and Quebec returns each give an increased catch of cod of about 50 per cent. The quantity marketed in a fresh state (including fresh fillets) was 306,860 cwts., compared with 331,421 cwts. in the previous year, while there were 103,116 cwts. of smoked prepared (including smoked fillets), compared with 78,287 cwts. in 1924.

The Lunenburg banking fleet had a very successful season. There were ten more vessels added to the fleet during the year. There are now ten steam trawlers operating out of Nova Scotian ports, and these supply mainly the demand for fresh fish.

*Mackerel, Herring and Sardines.*—The catch of these three kinds amounted to 1,428,155 cwts., as compared with 1,600,179 cwts. in the preceding year. A drop of some 60,000 cwts. in the catch of herring in Nova Scotia was more than offset by increases in the other three provinces so that the total catch of 923,428 cwts. is greater than that of 1924 by 78,967 cwts. The quantity of herring smoked again shows an increase, some 89,404 cwts. being prepared in this manner as against 71,366 cwts.

The catch of mackerel was 187,661 cwts., which is less than that of the previous year by 27,929 cwts. While the total catch was less, the catch for Nova Scotia was the second largest since 1910. The marketed value of the catch was poor owing to the American market being well stocked by their own fishermen.

There were 158,533 barrels of sardines taken, compared with 270,064 barrels in the previous year. There was a heavy run of these fish on the Maine coast which were sold by the Maine fishermen at a comparatively low price; hence the demand for Canadian fish was not as keen as it otherwise would have been.

*Other Sea Fish.*—There were 21,767 cwts of halibut taken, which is a slight decrease from the previous year. The catch of swordfish was 4,551 cwts., which is less than in 1924. Some 16,606 cwts. of tomcod and 11,893 cwts of flounders were caught. This is a slight increase in the case of the former and nearly double the quantity in the latter instance.

## FISHERIES BRANCH

*Shellfish.*—The increase in the catch of lobsters is very noticeable. There were 340,838 cwts. taken compared with 272,213 cwts. in 1924. The catch and its disposal by provinces was as follows:—

1925	Catch	Catch in shell	Marketed canned
	cwt.	cwt.	cases
Nova Scotia.....	170,698	63,525	53,745
New Brunswick.....	65,894	10,991	27,236
Prince Edward Island.....	78,570	10,272	34,121
Quebec.....	25,676	1,313	12,395

1924			
Nova Scotia.....	115,275	34,550	40,831
New Brunswick.....	68,303	26,024	23,548
Prince Edward Island.....	65,893	6,650	26,814
Quebec.....	22,742	1,025	10,925

There were 19,960 barrels of oysters taken compared with 27,319 barrels in the previous year.

Clams and quahaugs also show a falling-off, some 28,459 barrels being dug compared with 40,327 barrels in the preceding year. There were 17,718 barrels of scallops landed which is an increase of 7,368 barrels.

*River Spawning Fish.*—The catch of salmon was 57,352 cwts. compared with 57,561 cwts. in the previous year.

The quantity of smelts taken dropped from 88,296 cwts. to 75,457 cwts. The catch of these fish in New Brunswick shows a big decrease.

There were 56,781 cwts. of alewives taken, compared with 31,401 in 1924. The catch in Nova Scotia was more than double that of the previous year, while that in New Brunswick gives a good increase.

### INLAND FISHERIES

The catch of whitefish was 186,648 cwts., compared with 167,706 cwts. in 1924. The province of Ontario was the only one to show a decrease in the catch.

There were 86,877 cwts. of pickerel landed, compared with 101,610 cwts. in the previous year. In addition, some 34,453 cwts. of blue pickerel were landed in the province of Ontario. This quantity is slightly greater than that landed in 1924.

Some 45,555 cwts. of herring were landed in Ontario, compared with 125,013 cwts. in the year previous.

### PACIFIC FISHERIES

The fishing industry on the Pacific coast, which produces nearly half the total value for the whole of Canada, was again successfully prosecuted and the results show an increase of about a million and a quarter dollars.

*Salmon.*—There was a catch of 1,873,376 cwts. compared with 1,965,159 cwts. in 1924. The number of cases canned was 1,720,622, compared with 1,747,505 in the year previous. Owing to higher prices obtaining, however, the



value of the production in this one variety was \$14,973,885 or nearly two million dollars more than in 1924.

There were 392,545 cases of sockeye packed, or an increase of 22,944 cases. The largest pack was that of chums 607,337 cases compared with 570,497 cases in the previous year.

*Halibut.*—The catch of halibut was 318,240 cwts., which is somewhat less than that of the year previous, when some 331,382 cwts. were landed. The value of this fishery declined considerably due chiefly to the cold storage holdings, the latter having been held for the close season with the expectation of considerably increased prices, which failed to materialize.

*Herring.*—There were 1,437,875 cwts. of herring landed, compared with 1,157,625 cwts. in 1924. Of the catch there were 1,083,174 cwts. dry salted. This is the largest pack on record for the Pacific province.

*Pilchards.*—The catch was 318,973 cwts. compared with 27,485 cwts. in 1924. The large increase is due to the fact that pilchards were allowed to be processed in reduction works' plants for the first time. There were 495,653 gallons of oil and 2,083 tons of meal produced on the west coast of Vancouver Island from these fish.

*Whales and Seals.*—The operations of the whaling company were not as successful as in 1924, the number of whales caught falling from 415 to 351. The number of fur seals taken was 4,465 compared with 2,232 in the previous year.

#### INSPECTION OF FISH

The inspection of certain kinds of fish, and the packages in which they are marketed, is carried on under authority of the Fish Inspection Act. The Act makes it necessary for packers to have both fish and barrels in accordance with its requirements and empowers Inspectors to examine such whenever and wherever it is necessary and convenient.

The work was carried on during the year 1925-26 with a staff of two permanent and twelve temporary inspectors on the Atlantic coast and two temporary inspectors on the Pacific coast. On the Atlantic coast during the year there were inspected over fifty-two packages of various kinds containing salted herring, mackerel, alewives and salmon. There were also inspected 62,000 boxes of smoked herring which were prepared for export. In addition to these 80,000 empty barrels were examined to ascertain whether they were up to the standard required by the Act before they passed into the hands of the packers.

On the Pacific coast the large and very important trade in dry salted herring between British Columbia and China was supervised by the department's inspectors. Provided the container is of standard size and filled to capacity with fish that are properly cured a certificate to that effect is issued by the inspector to the shipper of each shipment and the inspection system is now so satisfactory to shippers that they would not think of making a shipment without the official certificate. During the year under review 290,000 boxes of dry salted herring, each containing four hundred pounds, were inspected.

Under this system of inspection the quality of the cured articles on both coasts is being rapidly improved. The greatest and probably the most important improvement of all is in the quality and strength of the barrels that are now being made all over the Atlantic coast, which alone would seem to justify the institution of our inspection system.

## INSPECTION OF CANNERIES AND CANNED FISH

The inspection of fish canneries of all kinds throughout Canada, the raw material to be used therein and the process of canning the product and the labelling and marking of the cans was carried on during the year 1925-26 as previously under the provisions of the Meat and Canned Foods Act. This inspection is carried on by the department's staff of fishery overseers as part of their regular duties. There are between six and seven hundred canneries, large and small, canning fish of various kinds on the Atlantic and Pacific coasts. As a result of the inspection that has been conducted for several years there is a marked improvement not only in the conditions under which canning operations are carried on from the sanitary point of view but in the quality of the canned product as well. Defective buildings and equipment are being constantly rectified and improved at the instigation of the inspecting officers.

## FISHERIES INTELLIGENCE SERVICE

Under this service there was carried on during the season of 1924:—

1. The collection of monthly statistics of the sea fisheries, and the compilation of such in a summarized form for publication through the press each month.
2. The publication of a quarterly bulletin containing the statistics in detail. The bulletin is distributed to the trade and all directly concerned. The statistics are practically all collected by the regular fishery officers while performing their other duties as such and at very little additional cost.
3. The collection of information concerning supplies of bait day by day along certain stretches of the coast during the spring and summer months. The information is gathered by the officers of the department, who send it by telegram daily to certain ports where it is posted up for the information of masters of fishing vessels and those looking for bait.

## FISHING BOUNTY

Under the authority of "An Act to encourage the development of the Sea Fisheries and the building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the department and paid to fishermen of the maritime provinces. The bounty is distributed under regulations made from time to time by the Governor in Council.

For the year 1925, payment was made on the following basis:—

To owners of vessels entitled to receive bounty—\$1 per registered ton, payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty—\$8 each.

To owners of boats measuring not less than 13 feet keel—\$1 per boat.

To boat fishermen entitled to receive bounty—\$6.30 each.

There were 9,979 bounty claims paid. In the preceding year there were 10,104 bounty claims paid.

The total amount paid was \$159,984.80 allocated as follows:—

To 540 vessels and their crew.....	\$ 41,948 30
To 9,439 boats and their crew.....	118,036 50

## FISHING BOUNTY EXPENDITURE FOR 1925-26

County	Boats	Men	Amount	Vessels	Tons	Average tons	Men	Amount	Total amount
			\$ cts.					\$ cts.	\$ cts.
<i>Nova Scotia</i>									
Annapolis.....	141	256	1,753 80	1	44	44	10	124 00	1,877 80
Antigonish.....	131	200	1,391 00						1,391 00
Cape Breton.....	315	581	3,979 35	24	399	17	93	1,143 00	5,122 35
Cumberland.....	1	1	7 30						7 30
Digby.....	331	584	4,010 90	4	95	12	21	263 00	4,273 90
Guysboro.....	554	774	5,465 25	28	463	17	133	1,527 00	6,992 25
Halifax.....	945	1,246	8,798 85	68	924	14	275	3,124 00	11,922 85
Inverness.....	193	600	3,969 05	9	117	13	43	461 00	4,430 05
Kings.....	31	47	327 10						327 10
Lunenburg.....	479	591	4,203 00	123	6,570	53	1,621	19,538 00	23,741 00
Pictou.....	25	34	239 20						239 20
Queens.....	133	218	1,509 00	13	226	17	80	866 00	2,375 00
Richmond.....	343	647	4,419 45	22	373	17	90	1,093 00	5,512 45
Shelburne.....	459	913	6,212 55	16	389	24	127	1,405 00	7,617 55
Victoria.....	277	430	2,986 35	7	103	14	29	335 00	3,321 35
Yarmouth.....	134	304	2,049 20	8	454	57	112	1,350 00	3,399 20
Total.....	4,492	7,426	51,321 35	323	10,157	31	2,634	31,229 00	82,550 35
<i>New Brunswick</i>									
Charlotte.....	255	448	3,086 75	2	13	6	2	48 30	3,135 05
Gloucester.....	249	692	4,617 35	200	3,036	15	871	10,007 00	14,624 35
Kent.....	54	95	652 50						652 50
Northumberland.....				1	21	21	6	69 00	69 00
Restigouche.....	1	2	13 60						13 60
St. John.....	33	47	329 80						329 80
Total.....	592	1,284	8,700 00	203	3,070	15	879	10,124 30	18,824 30
<i>Prince Edward Island</i>									
Kings.....	384	532	3,739 80	3	41	13	6	89 00	3,828 80
Prince.....	413	759	5,129 00	2	22	11	5	62 00	5,191 00
Queens.....	111	244	1,650 90						1,650 90
Total.....	908	1,535	10,519 70	5	63	12	11	151 00	10,670 70
<i>Quebec</i>									
Bonaventure.....	392	745	5,093 55	2	23	11	5	63 00	5,156 55
Gaspé.....	2,293	4,847	32,838 80	7	125	18	32	381 00	33,219 80
Saguenay.....	658	1,226	8,398 60						8,398 60
Matane.....	104	163	1,164 50						1,164 50
Total.....	3,447	6,986	47,495 45	9	148	16	37	444 00	47,939 45
Grand total..	9,439	17,231	118,036 50	540	13,437	25	3,561	41,948 30	159,984 80

## FISH CULTURE

Canada since confederation has always held a foremost place in fish culture, and at the present time its fish cultural service is second only to that of the Federal Government of the United States. It is operating thirty-three main hatcheries, six subsidiary hatcheries, four salmon-retaining ponds and one eyeing station.



The output from these establishments during 1925 was 707,273,319, as shown by the species in the following statement:—

STATEMENT, BY SPECIES, OF THE FISH AND FISH EGGS DISTRIBUTED FROM THE HATCHERIES DURING THE YEAR ENDED DECEMBER 31, 1925

Species	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and older fish	Total distribution
<i>Salmo salar</i> —Atlantic salmon.....	732,800	8,763,898	7,336,000	7,907,460	4	24,740,162
<i>Salmo irideus</i> —Rainbow trout.....	35,000	366,000	39,500	106,455		546,955
<i>Salmo Clarkii</i> —Cutthroat trout.....	119,890	604,426		8,807		733,123
<i>Salmo gairdneri</i> —Steelhead salmon.....		157,625		10,811		168,436
<i>Salmo gairdneri</i> —Kamloops trout.....	2,020,500	276,910		2,124		2,299,534
<i>Salmo gairdneri</i> —Loch leven trout.....		474,350	212,000	20,654		707,004
<i>Salmo gairdneri</i> —Brown trout.....		74,570		33,930		108,500
<i>Oncorhynchus nerka</i> —Sockeye salmon.....	35,524,500	53,081,025	1,450,260	9,248,789		99,304,574
<i>Oncorhynchus tshawytscha</i> —Spring salmon.....	1,337,925	644,393		253,157	4	2,235,479
<i>Oncorhynchus kisutch</i> —Coho salmon.....	54,000	118,500				172,500
<i>Oncorhynchus keta</i> —Chum salmon.....	207,000					207,000
<i>Salvelinus fontinalis</i> —Speckled trout.....	1,183,000	893,829	617,500	1,803,746	151	4,498,226
<i>Coregonus clupeaformis</i> —Whitefish.....		435,133,050				435,133,050
<i>Cristivomer namaycush</i> —Salmon trout.....		10,535,472	5,053,000	2,563,441		18,151,913
<i>Argyrosomus arcti</i> —Cisco.....		11,199,755				11,199,755
<i>Stizostedion vitreum</i> —Pike.....		105,715,000		900		105,715,900
<i>Perca flavescens</i> —Yellow perch.....		1,350,000				1,350,000
<i>Micropterus dolomieu</i> —Black bass.....				308		308
<i>Pomoxis annularis</i> —Crappie.....				900		900
	41,214,615	629,388,803	14,708,260	21,961,482	159	707,273,319

NORTH AMERICAN COMMITTEE ON FISHERIES INVESTIGATIONS

This committee continues to perform excellent services at practically no cost to the Governments represented thereon. The committee was created in 1921 and now consists of three representatives each of the fisheries services of Canada and the United States and one each of Newfoundland and France. Its duty is to determine what general fishery investigations should be undertaken in areas in which two or more of the Governments represented are interested and to arrange for co-operation in carrying such out,—thus avoiding needless duplication,—and co-ordinating and correlating the results. It usually meets twice each year, once in the spring when the work to be undertaken during the summer is decided upon, and once in the fall, when the results are considered and arrangements are made for their co-ordination and correlation. The spring meeting of 1925 was held in New York and the fall meeting in Montreal.

The work mainly conducted during the year was a continuation of the study of the life-history of cod, haddock and mackerel. A large number of fish, principally cod and mackerel, were tagged in both Canada and the United States,

in order that their movements might be followed. Ocean temperatures and currents and their effect on the movement of fish both directly and indirectly are also being studied. Intensely interesting results are being obtained and it is anticipated that detailed reports on some of these matters will be published shortly.

#### PACIFIC HALIBUT TREATY AND INTERNATIONAL COMMISSION APPOINTED THEREUNDER

Off the Pacific coast of this continent there is what is by far the greatest halibut fishery in the world, though its potentialities have been seriously minimized by overfishing. The fishery from both Canadian and United States ports still continues to produce from fifty to fifty-five million pounds, dressed weight, per year.

This fishery was begun in a commercial way in 1888, when a fishing schooner from Gloucester, Massachusetts, lured by reports of abundance of halibut on the Pacific coast, made its way to Seattle, via cape Horn. During the first few years the industry had a struggle for existence, not because of lack of fish, as they proved to be in great abundance, but owing to inadequate and expensive marketing facilities, the markets of importance all being east of the Mississippi river. By 1892 these facilities were greatly improved, and the business began to grow rapidly. The first fishing was conducted off cape Flattery and the west coast of Vancouver island, but it soon was extended to Hecate strait, where fish of the very best quality were found to be so wonderfully plentiful that a vessel could take a full load of 300,000 pounds in two or three days of favourable weather. At that time only the fish of desirable size were retained. As Vancouver offered equally good rail facilities for shipping fish to the eastern markets, as did Seattle, and as it was considerably nearer the fishing banks the New England Fish Company, which for some time had been operating from Seattle, established a base in Vancouver in 1894, and the fishery from that port expanded rapidly.

Owing to its attractive appearance, its flavour, firm texture, excellent keeping qualities and the slight waste as well as little trouble in handling it in a retail way the demand for halibut grew rapidly both in Canada and the United States. Hence the fishery became more and more intensive and by 1914 all the nearby areas showed the result of overfishing. Consequently new producing areas were being sought and the fishery was extended more and more to the north and west, until now it is conducted as far west as Shumagin islands. Every move westward, however, increases the length of the voyage, which involves greater cost of production as well as a longer time from when the fish are caught until they can be marketed.

As halibut banks extend from off the coast of Oregon at intervals all the way to and into Bering sea, it might at first glance seem that the producing area is so large that exhaustion should not be probable, but it must not be overlooked that the continental shelf on the Pacific coast is quite narrow, so that the producing area is not nearly as great as would appear from its length.

While the fishery on this side of the Pacific is engaged in only from Canadian and United States ports, owing to the fact that it is largely carried on beyond territorial waters neither country alone could control it. At the same time it is highly in the interests of both countries that the fishery should be permanently maintained in a flourishing condition. Hence the question of finding an adequate method of dealing with the matter was one of those that was referred to the Canadian-American Fisheries Conference that was appointed in 1918 by the Governments of the two countries to consider a settlement of outstanding fishery questions between Canada and the United States. The confer-



ence, after taking evidence on the different sections of the coast, unanimously recommended that for the purposes of conservation and for the following other reasons there should be a close season for halibut fishing from the 16th of November in each year to the 15th of February following, both days inclusive, and that the two countries should arrange for a joint investigation into the life-history of the halibut:—

1. The weather conditions are then at their worst, and all or nearly all of the serious loss of life and vessels in this fishery has occurred during this time.
2. It is during this period that practically all the loss of fishing gear takes place, and such loss is then enormous. It is claimed that 50 per cent of the gear of every vessel is lost or has to be cut away during this time. When it is stated that the larger vessels "set" what is equal to 48 miles of line per day, and that hooks are fastened to these lines at intervals of about ten feet, what this loss of gear means in the aggregate will be realized.
3. Apart from the monetary loss involved in the destruction of gear, which in itself is exceedingly heavy, this widwinter fishery tends to drive the fish from the grounds. As the fish bite with avidity during the spawning season, it is reasonable to assume that when this gear is left in the water fish will become impaled on most of the hooks and will eventually die and decompose.
4. The evidence shows that 15 per cent of the annual catch is made during these three months, but in addition thereto it is estimated that 10 per cent of the total catch is taken and destroyed on this lost gear.
5. The fish caught at this time are in a very inferior condition from a food standpoint and should not be marketed. They are thin, their flesh is flabby, and they are known to the trade as "slabs."
6. Three months in the year are needed to properly overhaul and prepare the vessels, so that these three months would be used to advantage.

While there was little or no division of opinion as to the wisdom of the above course on either side of the line, as it became part of a proposed agreement for the settlement of several questions on which action was being delayed, Canada proposed in 1922 that the halibut question should be considered by itself. This was agreed to and resulted in the Treaty of the 2nd of March, 1923, for the protection of the Pacific halibut, which is the first treaty that was signed on behalf of Canada by a representative of the Canadian Government only. The treaty was ratified on October 21, 1924, and became effective on the first of the following month.

It provides,—

- (a) For the appointment of an International Commission of four members—two from each country—which commission is to exist as long as the treaty remains in force. The commission is to make a thorough investigation into the life history of the Pacific halibut and to report to the two Governments; and
- (b) For a close season for halibut in the North Pacific from November 16 in each year to February 15 following, both days inclusive. This close season is to remain effective at least three years, at the end of which time it may be modified by agreement between the two Governments on the recommendation of the International Commission.
- (c) The Treaty is to remain in force for five years and thereafter until two years after either party has given notice to the other of its wish to terminate it.



The personnel of the Commission are:—

*Canadian Members*.—W. A. Found, Director of Fisheries; J. P. Babcock, Assistant to the Commissioner of Fisheries for British Columbia.

*United States Members*.—Henry O'Malley, Commissioner of Fisheries for the United States; Capt. Miller Freeman, Publisher of *Pacific Fisherman* and other periodicals (Seattle).

The commission held its inaugural meetings at Seattle and Vancouver in November, 1924. Keeping in view the magnitude and peculiar difficulties of the investigation with which it was entrusted it decided on the following methods of procedure:—

1. The employment of a competent man as Director of Investigations.
2. The appointment of an honorary scientific advisory council, with which not only the Commission but the Director of Investigations could consult, and to which would be submitted the plan of investigation proposed by the Director, and such expansions thereof as would from time to time be found feasible.

This council consists of two members from Canada and two from the United States, viz.:—

*From Canada*.—Dr. A. McLean Fraser, Professor of Zoology in the University of British Columbia, and formerly Director of the Marine Biological Station at Departure Bay, B.C.; Dr. W. A. Clemens, Present Director of the aforesaid Marine Biological Station.

*From the United States*.—Professor John N. Cobb, head of the Fisheries College of the University of Washington; N. B. Schofield, in charge Department of Commercial Fisheries of California, San Francisco.

As above indicated the only compensation the members of the Council expect or receive is the personal satisfaction of assisting in a work of great value to both countries.

As Director of Investigations Mr. W. F. Thompson, a graduate of Stanford University, and who at the time was Director of the California Fisheries Laboratory, was engaged. Mr. Thompson had already spent two seasons in investigating the life-history of the halibut—1914-1916—when he was employed by the Fisheries Department of British Columbia. He had proved himself to possess the qualifications for which the commission was seeking. He entered actively upon his duties early in the year 1925, and since that time the work of investigation has gone on continuously. He has now a staff of five assistants, and the commission expects that as contemplated by the Treaty the investigations will be sufficiently advanced to enable the Commission to submit a report to the two Governments at the end of the three year period provided as a minimum for the close season.

The work is being carried out on a statistical and biological basis. A thorough statistical survey since the beginning of the industry has been nearly completed, and will be finished during the coming year. Also good advancement has been made towards determining the migration, growth, racial characteristics, etc. of the halibut. This side of the work will be greatly developed during the approaching season.

#### MARINE BIOLOGICAL BOARD

The Biological Board, which operates under the control of the department, was created in 1912 by Act of Parliament. It carries on purely scientific researches at two stations, one located at St. Andrews, N.B., and the other at Nanaimo, B.C. For ten years the membership of the board consisted entirely

of scientists, two of which were nominated by the minister and the others by universities in which biological research was being carried on. In 1923 the Act was amended with a view to bringing the board into closer contact with the practical problems of the fishing industry. Under the amended Act the board now consists partly of scientific men and partly of men familiar with the industry's practical side. With this new organization there have been established on both coasts stations at which it is intended to apply to the every day economic problems of those engaged in the industry, the results of previous and current scientific researches.

The new Atlantic station is located at Halifax, N.S. It was made ready for occupancy in the summer of last year, and in that short time a considerable amount of work of much economic value to the fishing industry has been accomplished.

The new Pacific station is located at Prince Rupert, B.C. Work at this station has not yet advanced so far as at the Halifax one, owing to some difficulty that arose over a site which is being provided by the Provincial Government, in addition to about half of the cost of the building that is to be erected thereon. The matter has now been satisfactorily settled, however, and the work is proceeding. In the meantime facilities have been provided by some of the fishing companies of Prince Rupert for the carrying on of experimental work, particularly with regard to refrigeration.

In addition to conducting the ordinary work of the stations, the board, during the year, provided short scientific and practical courses for fishery officers and fish hatchery officers. It also, at the request of the department, instituted a systematic plan of investigation covering a period of years into present fish cultural methods, through the agency of a committee of the board, known as the Research Committee.

The composition of the board and its various committees during the year 1925 was as follows:—

Dr. A. P. Knight, Chairman, Kingston, Ont.  
 Mr. J. J. Cowie, Secretary-treasurer, Ottawa, Ont.  
 Dr. Philip Cox, University of New Brunswick, Fredericton, N.B.  
 Dr. C. J. Connolly, St. Francis Xavier College, Antigonish, N.S.  
 Dr. C. H. O'Donoghue, Manitoba University, Winnipeg, Man.  
 Dr. E. E. Prince, Ottawa, Ont.  
 Very Rev. Canon V. A. Huard, Quebec, P.Q.  
 Dr. A. H. Hutchinson, University of British Columbia, Vancouver, B.C.  
 Dr. J. Playfair McMurrich, University of Toronto, Toronto, Ont.  
 Dr. W. T. McClement, Queen's University, Kingston, Ont.  
 Dr. A. H. McKay, Halifax, N.S.  
 Dr. R. F. Ruttan, McGill University, Montreal, P.Q.  
 John Dybhavn, Prince Rupert, B.C.  
 A. Handfield Whitman, Halifax, N.S.

The members of the board receive no pay, but are allowed travelling expenses in connection with the board's work and its meetings.

*Executive Committee of the Board.*—Dr. A. P. Knight, Mr. J. J. Cowie, Very Rev. Canon Huard, Dr. J. P. McMurrich, Dr. E. E. Prince, Dr. R. F. Ruttan.

*Atlantic Sub-executive Committee.*—Mr. A. Handfield Whitman, chairman; Dr. A. H. McKay, Dr. C. J. Connolly, Dr. A. G. Huntsman as secretary.

*Pacific Sub-executive Committee.*—Mr. John Dybhavn, chairman; Dr. A. H. Hutchinson, Dr. C. H. O'Donoghue, Dr. W. A. Clemens as secretary.

*Research Committee.*—Dr. A. G. Huntsman, chairman; Dr. R. E. Foerster, secretary; Dr. W. A. Clemens, Dr. A. H. Leim, Dr. C. H. O'Donoghue, Dr. Philip Cox.

Director Atlantic Coast Stations, Dr. A. G. Huntsman.

Director Pacific Coast Stations, Dr. W. A. Clemens.

A detailed report of the activities of the board's staff of workers will be found at appendix No. 2 of this publication.

#### NATURAL HISTORY OBSERVATIONS

During the summer and fall of 1925, the department's naturalist carried on investigations, as follows:—

A study of the American oyster, chiefly in regard to the development of the sex elements within the gonad;

Tidal observations at Buctouche and vicinity in relation to where oysters can live in the winter, the food of the oyster and parasites which infested it;

Observations as to how oysters are locally distributed at certain parts of the strait of Northumberland;

Observations of the mussel and soft-shell clams;

Observations of the present condition of the scallop at Mahone bay;

Observations of the value of Jumbo lobsters as reproducers;

Observations of the spawning habits of smelt.

At appendix No. 3 of this report, the naturalist's observations on the value of the Jumbo lobster will be found given in full.

I regret to report that twenty-nine fishermen lost their lives during the year in pursuit of their calling—twenty on the Atlantic coast and nine on the Pacific coast.

I am, sir, your obedient servant,

A. JOHNSTON,

*Deputy Minister of Marine and Fisheries.*



## APPENDIX

### REPORTS OF INSPECTORS OF FISHERIES

#### REPORT OF WARD FISHER, CHIEF INSPECTOR OF THE PROVINCE OF NOVA SCOTIA, FOR 1925

The total landed catch for the year was 249,000,000 pounds, an increase of 28,000,000 pounds, as compared with the catch of 1924.

The total marketed value of all fish and fish products was \$10,213,687, or \$1,436,436 greater than 1924.

The above is evidence that the fisheries, generally, were operated with satisfactory results to both fishermen and dealers. The conditions were favourable from the opening of the season, the weather being mild, and the coast free from ice, consequently the inshore spring operations began about two weeks earlier than for some years.

While the mackerel catch of 11,799,000 pounds was the second largest since 1910, the fishermen profited little, as the American markets were flooded by the extraordinary large catches taken off the coast of that country. Similar conditions affected the fishery during the previous year, when the catch was nearly equal to that of the past season.

There was a very considerable increase in the catch of flounders and skate, which fish, previous to 1924, was largely waste. Markets, however, have been found in Great Britain, to which country the greater portion of the catches are shipped. Nearly 700,000 pounds of skate were landed, having a marketed value of \$23,380.

The catch of scallops was 12,404 barrels, an increase of nearly 5,000 barrels over the previous year. In the comparatively new area of the Bay of Fundy district the catch was 8,187 barrels, as compared with the catch of the old and well-known fishery of the Chester district, where the catch was only about one-half that taken in the Bay of Fundy region. The development of these new areas is the more evident when it is noted that there were only thirty-five licensed scallop fishermen operating, as against nearly 200 in the Chester district. Other areas of considerable extent are known to exist in the Bay of Fundy waters, and investigations have shown that many other places along the eastern coast have deposits of this valuable shellfish. The markets are being extended and an excellent price was received for the available supplies.

Among the more outstanding features of the year were:—

#### SUCCESS OF THE LOBSTER FISHERY

As the catch for 1924 was the smallest on record, it was quite generally feared that the fishery was suffering a serious decline and that drastic action would have to be taken to safeguard the fishery.

Happily, however, the catch for 1925 showed a substantial increase over the previous year, being 170,698 cwts., as compared with 115,275 cwts. for 1924, an increase of 55,423 cwts. With few exceptions the increase was general throughout the district. Also, the prices received by the fishermen were higher than the previous year.

The following totals show the catch, and the marketed values, as compared with 1924.

	1925 Catch		1924 Catch	
	Cwts.	Value	Cwts.	Value
Inverness.....	11,156	168,928	8,675	116,134
Richmond.....	6,721	98,540	4,097	35,530
Cape Breton.....	10,875	162,444	10,295	139,782
Victoria.....	5,026	89,126	5,471	93,341
Halifax.....	5,176	92,728	3,112	65,344
Guysboro.....	11,650	184,527	7,272	103,152
Antigonish.....	7,664	134,673	6,413	93,935
Pictou.....	16,840	265,139	12,302	159,676
Colchester.....	638	9,557	680	8,950
Cumberland.....	7,952	121,076	7,104	94,707
Lunenburg.....	2,327	32,182	1,224	23,452
Queens.....	5,751	77,923	2,727	43,004
Shelburne.....	24,811	448,454	15,785	304,693
Yarmouth.....	39,977	836,152	23,591	458,860
Digby.....	11,941	265,514	5,658	135,335
Annapolis.....	1,043	23,500	695	21,552
Kings.....	150	4,500	174	6,960
	170,698	3,014,963	115,275	1,904,407

The increases, as noted above, are largely responsible for the substantial increases in the total marketed value of the fisheries as compared with that of 1924. The quantity shipped alive to the United States and Canadian points, continues to increase from year to year, and undoubtedly affects the quantity packed. Over 63,000 cwts. were shipped alive last year, which is nearly 20,000 cwts. greater than since 1921. From the western district alone about 25,000 cwts. were shipped to the United States by steamers from Yarmouth, and, in addition, over 12,000 cwts. were shipped by smacks. The total quantity used for canning in the western district was 35,000 cwts., or less than the quantity shipped alive.

#### THE COD AND HADDOCK FISHERIES

The cod and haddock fisheries are so closely related, particularly with respect to the fresh, smoked, and dried fish markets, that they may be considered under the one head. The past year was a most successful one, the total catch being the greatest for any season during the past five-year period. The catch was 173,195,600 pounds, cod being responsible for 140,823,800 pounds, and haddock 32,371,800 pounds.

The following totals will reveal certain developments with respect to the disposal of the catches that will be of interest:—

#### COD

	Catch	Fresh	Smoked	Dried
	cwt.	cwt.	cwt.	cwt.
1921.....	1,415,190	74,620	16,456	319,660
1922.....	1,560,271	61,691	21,201	372,699
1923.....	1,048,943	75,970	30,888	219,405
1924.....	1,129,801	116,907	28,435	220,263
1925.....	1,408,238	97,866	51,226	300,932

#### HADDOCK

	Catch	Fresh	Smoked	Dried
	cwt.	cwt.	cwt.	cwt.
1921.....	259,195	114,247	39,917	10,741
1922.....	298,593	112,931	49,281	15,109
1923.....	297,023	132,202	51,481	12,551
1924.....	320,804	144,915	45,386	19,052
1925.....	323,718	148,935	45,103	16,818

It will be noted that during the five-year period the quantity of cod, smoked, has increased more than three-fold, while the quantity of haddock, smoked, has remained nearly stationary. On the other hand, the quantity of haddock marketed in a fresh state, which include fresh fillets, has increased from 11,424,700 pounds to 15,123,300 pounds.

The increase in the fresh and smoked fish trade, which also includes herring and mackerel, has been coincident with the excellent advertising of our sea products, backed by a very great improvement in the quality of the goods marketed. The improvement is particularly noteworthy with respect to fresh and smoked fish. Improved transportation facilities have done much to extend the markets.

The response to the efforts of the dealers to expand the markets is evidenced by the fact that notwithstanding the large increase in the catches, the orders from Canadian and American markets have exceeded the supply during a considerable portion of the year.

The extent and value of the fresh and smoked fish trade may readily be seen by noting that about 1,000 carloads were forwarded from Mulgrave and Halifax alone. In addition, large quantities were shipped in less than carload lots, and over 7,000,000 pounds by express.

The possibilities for continued expansion are excellent.

#### THE SUCCESS OF THE LUNENBURG FLEET

The Lunenburg fleet of seventy-four vessels had the most successful season on record for the number of vessels engaged. The total catch was 264,725 quintals, an average per vessel of 3,577 quintals. The "high line" was the schooner *W. E. Knock*, Captain William Deal, with a catch of 6,418 quintals.

What the success of the fleet means is readily seen when it is noted that the average price per quintal was \$7.25, or a total of over \$2,000,000. Rarely, if ever, in the history of the fleet, have the rewards been as great as during the past year.

The year also witnessed the result of the revival of the interest awakened by the success of the operations of 1924, when the fleet of sixty-four vessels had a very profitable year. The revival is indicated by the increase of twelve new vessels, and the continued activity of the shipyards. Some twenty new schooners were launched from the yards of the south shore west of Halifax. About ten more were on the stocks at the end of the year, and sufficient orders were on hand to keep the yards busy during the whole of 1926. About seventy-five per cent of the twenty new vessels were constructed in Lunenburg county yards, these adding greatly to the prosperity of the county.

It should, however, be pointed out that the satisfactory and remunerative marketing of any increased catches will only be possible by improving the present curing and processing methods. This is necessary in order not only to hold the markets which the Lunenburg cure has had control over many years, but also to enter new markets and successfully compete with the product of other countries. Lunenburg is becoming alive to the necessity of this course, and the coming season will see the result of the interest manifested in this regard.

#### COLD STORAGE EXPANSION

With the expansion of the fresh and smoked fish trade, it became quite evident that the present storage and handling facilities are wholly inadequate to properly care for the products. Halifax, which is fast becoming the great centre of the industry has prime need of greater and improved facilities. Negotiations are now in progress for the establishment of a large and modern cold



storage plant, which will not only be of direct advantage to the Halifax trade, but will greatly assist the business of the whole coast.

The Maritime Fish Corporation intends constructing a plant on the Dartmouth side of Halifax harbour, in order that the demands of the fresh fish trade may be met more expeditiously and profitably than from the present plant at Canso.

#### THE STEAM TRAWLER FLEET

To meet the demands of the fresh and smoked fish markets, particularly during the winter season, the steam trawler fleet of six steamers was increased to ten, by the addition of the *Viernoe* operating for the National Fish Company, and the *Lord Beaconsfield*, *Lord Shaftesbury* and *Lord Darling* for the Maritime Fish Corporation. The ten trawlers are of British or Canadian registry.

#### PROBLEM OF THE SHORE FISHERMEN

It is quite apparent that the new conditions arising from the remarkable expansion of the fresh and smoked fish trade are changing the whole trend of the industry. It is evident that the isolated fisherman is not in a position to take advantage of the markets. Nor is he, along a large portion of the coast, in a position to take care of the catches. Without capital, and without equipment for drying or pickling, he is sadly handicapped while his more fortunate brothers at Lockeport, Liverpool, Yarmouth and other buying and curing centres, are disposing of their catches direct from the boat for cash without any of the labour of caring for and curing the catch.

Operating methods have been greatly changed. In the earlier days 80 per cent of the catches of cod, herring and mackerel were marketed in a dried or pickled condition by the fishermen, the process occupying a large share of their time. These methods have quite generally been superseded, owing to the rapidly growing demand for fresh fish with the result that fishermen along a considerable portion of the coast dispose of their catches fresh from the boats, traps, and nets, and usually at a price so low as to make the business unprofitable, except at points where the large buyers may be easily and inexpensively reached. To put it in a plain way, the reason so many of our fishermen have quit is that they have found it impossible to earn a comfortable living under the conditions that have obtained the past ten or more years.

The introduction of motor power, and other modern methods have outdistanced many of the fishermen scattered along the coast. In 1882 the number of small boats, row and sail, was 12,000, employing over 22,000 men. At present nearly 6,000 gasoline boats are employed, representing an investment of nearly one and a half million dollars. The total value of the 12,000 boats in 1882 was only \$328,000.

The row and sail boat is too laborious an equipment to suit present-day conditions. The fathers, hard-working, simple-living, were not affected by the love of easy living, quick return, and bright lights, all of which are essential to the children if they are to keep step with the enterprise of prosperous life.

The loss of man-power has been more than made up by the adoption of better equipment, better processing of the catches, larger rewards and quicker return. The cod catch, for instance, has increased from 61,000,000 pounds in 1882 to 113,000,000 pounds in 1924, and the catch of haddock doubled.

While the loss in our fishing population is to be deplored, the industry is in a much more promising condition than in its history, due largely to the creation of fresh fish centres. The demand for sea food is growing more insistent, and notwithstanding the growth in storage and processing establishments, and the introduction of a fleet of modern steam trawlers, the demand is difficult to meet, particularly during the winter season.

It would appear that the problem of the shore fishermen can be solved in two ways only. First, by the employment of the smaller deck boat of 10 tons or more, and of the larger schooner of from 40 to 70 tons, thus enabling the grounds to be fished for several successive days before returning home. Or, second, employment of many of the shore fishermen in connection with the larger centres, or with the schooner fleets. For instance, during the past year the Lunenburg fleet has had to engage about 400 fishermen from Newfoundland, in addition to the number previously employed, to make up the necessary quota to man the vessels. It is not easy for many of our fishermen to break old customs. For generations they have been their own masters, largely independent of outside influences, and therefore they do not take readily to employment either on the fishing fleets or on shore.

With particular regard to the necessity for larger boats and vessels, and improved methods, the following statistics covering the landings at Lockeport the past year will be of interest, as that port has built a fleet of small schooners and large motor boats able to operate the whole year:—

## LOCKEPORT 1925

	Cod	Haddock	Inshore	Offshore
	lb.	lb.	lb.	lb.
January.....	213,500	164,000	377,500	
February.....	278,000	241,500	456,500	63,000
March.....	304,000	111,000	134,800	280,500
April.....	221,000	141,500	35,500	327,000
May.....	312,000	41,800	353,800	
June.....	411,500	122,500	468,500	44,000
July.....	632,000	6,000	444,600	188,000
August.....	511,000	3,600	244,600	270,000
September.....	284,500	141,000	352,500	73,000
October.....	215,000	91,500	306,500	
November.....	515,000	471,500	563,500	423,000
December.....	183,000	121,500	304,500	
	4,080,500	1,652,000	4,042,800	1,668,500

The above shows that nearly five and three-quarter million pounds of cod and haddock were landed at Lockeport, over four million pounds from the inshore grounds. In addition to the total quantity shown, considerable catches by the larger vessels were landed at Halifax, Liverpool, and other ports.

## LOSS OF LIFE

The hazardous calling of the fishermen has been poignantly revealed by the loss of life the past year. "What Price Fish" has been distressingly brought to the families and friends of the eleven following men who were drowned while engaged in their calling:—

(1) Ernest Brown, Stoney island, Cape Sable island, lost March 11, while fishing from small boat in Barrington bay.

(2) Kenneth Brown, Stoney island, Cape Sable island, lost March 11 from small boat off Stoney island.

(3) Carl Neilson, washed overboard from the National Fish Company's trawler *Lemberg*, during a heavy gale while the trawler was on her way from the fishing bank to Halifax.

(4) Richard Schnare, East River, Lunenburg county, lost March 14, from the schooner *Mary H. Hirtle*, while fishing on Western Banks.

(5) Freeman Feener, Lunenburg, lost April 27, from schooner *Jean Smith*, while fishing on Western Banks.



- (6) William Newport, Garnish, Newfoundland, lost May 6. from schooner *Vera P. Thornhill*, while fishing on Quero Bank.
- (7) Charles Grundy, Garnish, Newfoundland, lost May 5, from schooner *Vera P. Thornhill*, while fishing on Quero Bank.
- (8) Belden Cox, south side, Cape Sable island, lost May 6, while fishing from dory off Spectacle island, Yarmouth county.
- (9) Bernard Cox, south side, Cape Sable island, lost May 6, while fishing from dory off Spectacle island, Yarmouth county.
- (10) Richard Hynick, Blue Rocks, Lunenburg, lost August 21, from schooner *Douglas J. Mosher*, while at Queensport harbour, Guysboro county.
- (11) John Cook, South Ingonish, Cape Breton, drowned December 8, when dory upset in heavy gale while attempting to reach the schooner *Julia F. C.*

#### FISHERIES CRUISER SERVICE

The past year the patrol was undoubtedly the most important of any reported for many years. The winter season was particularly difficult, hazardous and strenuous. Ice conditions and gales were unusually heavy. Both Captain Barkhouse of the *Arras*, and Captain Cousins of the *Arleux* deserve commendation for the zeal and vigilance which characterized their work. A digest of the logs will reveal the nature of the service, and show a record of outstanding efficiency.

#### CRUISER "ARRAS"—CAPTAIN BARKHOUSE

The *Arras* was placed in commission at Liverpool, N.S., on May 21, and was undergoing her annual refit.

June 9. Proceeded to sea, cruising on station arriving in Halifax for supplies on June 10.

June 18. Proceeded cruising on station between Halifax and Shelburne.

June 22. Returned to Halifax to prepare for cruise to Grand Banks off Newfoundland, to act as hospital ship with the Nova Scotia fishing fleet.

June 26. Proceeded to sea and located the fishing fleet on June 28. Ship remained with the Grand Banks fleet until July 4, when she proceeded to the Western Banks, Middle Ground, Quero and Sable Island fishing grounds.

July 9. Arrived in Newfoundland waters, and joined the Grand Bank fleet. The ship remained with the fleet, giving medical treatment to all sick fishermen.

July 24. Found the Lunenburg schooner *Delawand II* ashore off the entrance to Holyrood harbour. Succeeded in floating the schooner without any damage. Remained in close touch with the fleet until all left for home and Western Banks on August 30. Cruised west with the fleet, arriving at North Sydney, September 1.

During the fishing season on Grand Banks we had 115 cases of sickness and four hospital cases which were taken to St. John's and placed in hospital.

September 2. Proceeded to St. Pauls island to calibrate the Direction Finding Station.

September 3. Cruised west and took up our cruising station on the west coast of Nova Scotia.

September 26 and 27. Calibrated the Direction Finding Station at Yarmouth, then proceeded cruising on station from Halifax to Prince Edward Island. Remained on station until November 7.

November 8. Cruising west, found the schooner *Eldora* in a sinking condition in the Bras d'Or lakes. Placed crew on board to assist with pumps and took schooner in tow.

November 9. Left schooner *Eldora* at D'Escouse, Cape Breton, then cruised west, arriving at Halifax on November 10.



November 11. Took up station on the south coast of N.S., cruising between Halifax and Shelburne to assist vessels and keep the harbours free from ice. Continued on this station until March 31, 1926.

During the winter the *Arras* assisted fifty-three schooners and two steamers from ice, and kept the harbours open when needed for the safe movements of shipping.

During the year there were thirty-seven American fishing vessels on the stations on which the *Arras* was working; these we boarded fifty-three times.

There were very few complaints about illegal fishing by foreign fishing vessels, and not one complaint of interference by beam trawlers on the Grand Banks of Newfoundland.

During the year the *Arras* steamed 13,993 miles, being at sea 1,546 hours, and consumed 1,107 tons of coal.

#### CRUISER "ARLEUX"—CAPTAIN COUSINS

March 21. *Arleux* completed repairs and proceeded to Halifax for supplies.

March 27. Cruising westward towards Lunenburg, Liverpool, Lockeport and Shelburne on patrol work. Fishermen report taking good catches of lobsters along the coast.

March 31 to April 2. Continued cruising regular station. On that date proceeded in search of missing fishing schooner *Opitza* of Lockeport. At 6 p.m. received message that schooner arrived at home port.

April 23. Proceeded towards vicinity of wrecked steamer *Raifuka Maur* (Japanese) in search of bodies.

April 24. Searching for bodies in vicinity of wreck. At 3.30 p.m. spoke to H.M.S. *Wistaria*. Sea too rough to continue search. H.M.S. *Wistaria* proceeded towards Halifax, 8.30 p.m. Wind increased to strong N.E. gale. Proceeded towards Nova Scotia coast, arriving at Shelburne at 6.30 p.m., April 25.

May 2. Cruising eastward, 3.30 p.m. off Little Hope picked up wrecked Tern schooner *Cape Dor's* motor boat. Proceeded to Liverpool, delivered boat to Customs.

May 3. Proceeded to wrecked schooner *Cape Dor* and took wreck in tow out of way of navigation. After towing schooner two miles pulled rudder off vessel. Proceeded to Liverpool.

May 16. Proceeded to wreck and took her in tow to Liverpool bay.

May 8. Wrecked schooner was blown up by H.M.C.S. *Festubert*.

May 11. Cruising towards Halifax for supplies.

May 16. Cruising westward to meet American seining fleet due on Nova Scotia coast.

May 21. At Shelburne, boarded American seiner *Lucia*, first seiner to arrive on coast.

May 27. Cruising off Sambro with fifteen American seiners, no mackerel sighted.

May 30. Cruising east with seining fleet, several seiners taking mackerel off Liscomb, and bound home with catches. Local netters taking good catches of mackerel.

June 2. Cruising off Canso with seining fleet. No mackerel schooling.

June 5 to June 7. Cruising between Canso and Louisburg with seiners. Several seiners taking mackerel.

June 17. Last seiners left the coast. The larger body of mackerel seemed to have passed before the seiners arrived on coast.

June 18. Arrived at Halifax.

June 20 to 27. Performing work for Marine and Fisheries Department at Dartmouth.

July 8-14. At dockyard, Halifax, cleaning boiler, etc.

July 15. Cruising westward towards Lockeport and Shelburne to look after American fishing vessels taking bait inside three-mile limit.

July 31. 11.55 a.m. proceeded to Government wharf at Shelburne to assist fighting fire on wharf.

August 1 to August 3. Cruising between Liverpool and Shelburne. Herring plentiful. Large fleet of local fishing boats fishing between Liverpool and Shelburne.

August 4. Cruising towards Yarmouth, arriving there at 6.15 p.m.

August 7. Proceeded with scallop boat *Jessie May*, Fishery Overseers Torrie and D'Entremont on board, to Mud islands, locating position for scallop boat for dragging operations. Found no scallops.

August 8. Carried on dragging operation, but found no scallops. At 4.15 p.m. arrived at Pubnico.

August 10. Proceeded to Yarmouth, arriving at 11.25 a.m.

August 11. Scallop boat *Jessie May* at Yarmouth with engine trouble. Took up operations from the *Arleux* between S. W. Fairway buoy and Yarmouth cape. Overseers Torrie and D'Entremont and Mr. McRae of the scallop boat *Jessie May* were on board. Found no scallops.

August 12. Operating between Lurcher shoal and Brier island, where a large number of scallops of good quality were found. This bed has not yet been fished by fishermen.

August 18. Operating for scallops southwest of Brier island about 6 miles. Found large number of scallops.

August 19. Proceeded towards Shelburne to look after American fishing vessels.

August 21. Proceeded to operate for scallops off Shelburne and Lockeport. Found no scallops.

August 24. Cruising eastward, arriving at Halifax.

August 28. Proceeded cruising towards Canso and Northumberland straits.

August 31. Arrived at Pt. Du Chene.

Sept. 2. Looking after illegal lobster fishing off Richibucto, N.B. At 10.45 a.m. seized motor boat with illegal lobsters on board 2 miles north of line. Took motor boat in tow to Port DuChene and passed her over to Fishery Overseer LeBlanc at Shediac.

*Arleux* patrolling between Richibucto and Miramichi Bay, destroying a large number of lobster traps and gear. A great deal of illegal lobsters are smuggled in to factories operating in other districts where open season is on. This smuggling could be stopped to a great extent if a fast motor boat was attached to the *Arleux* while on this patrol, as the water on this coast is very shallow, and the ship is obliged to remain so far off shore. A great deal of the smuggling is carried on close in shore.

The *Arleux* remained in this district until September 30, when she returned to the western coast of Nova Scotia.

October 2. At Halifax.

October 7. Cruising westward to Grand Manan and Bay of Fundy, on patrol work. Fishermen report fairly good fishing along the coast.

October 20. Calibrated D. F. Station at St. John, N.B.

October 22. Arrived at Yarmouth.

October 23. Cruising eastward.

October 27. Arrived at Halifax.

November 3. Cruising westward in search of illegal fishing. Few mackerel taken off Lunenburg.

November 7. Three American seiners on coast, cruising in company with seiners as far as Sambro. No mackerel showing.

November 7 to 13. Seiners working between Sambro and Cross Island, Lunenburg.

November 19. Seiners left the coast with no catch.

November 20. Ship at Shelburne. Officers and crew attending services on board United States steamer *Tampa* in respect to the officers and seamen drowned from the United States steamer *Morrell* in Shelburne harbour November 16.

November 21. Towed in schooner *Athena* to Shelburne in a leaking condition, and docked schooner at wharf.

November 23. Proceeded eastward, arriving at Halifax, for cleaning boiler.

December 1. Cruising westward on patrol work as far as Yarmouth, looking after American fishing vessels.

December 12. Cruising eastward, arriving at Halifax December 14.

December 16. Cruising towards Canso to protect the winter fishing fleet.

December 17. Cruising in Chedabucto Bay with fishing fleet from Arichat, Petit de Grat and Canso.

December 19. Towed coasting schooners *Carl Richard* and *Speed* to Inhabitants Bay. 3.30 p.m. towed fishing schooner *Hockomock* with engine trouble, into Canso.

December 30. Towed coasting schooner *John Halifax* to gut of Canso. Cruising with fishing fleet in Chedabucto Bay. At 6.15 p.m. proceeded in search of missing fishing boat from Dover. 8.00 p.m. received wireless message that boat had arrived safely at Canso.

December 31. Towed coasting schooner *J. E. Garland*, with damaged sails, from Canso to St. Peter's canal. Ship breaking ice in canal, and returned cruising with fishing fleet.

January 3. Proceeded westward towards Sheet harbour.

January 4. Breaking ice in Sheet harbour and assisting pulp steamer *Urter* through ice to West river.

January 6. Breaking ice in East river, and towing coasting schooner *Flora* clear of ice.

January 7. Cruising eastward towards Canso, arriving at Canso 5.15 p.m.

January 9. Breaking ice in Gut of Canso, and assisting ss. *Robert Cann*, and *S.S.C.D. 98* through ice to Mulgrave.

January 11. Towed coal laden schooner *Linda Pardy* from Port Malcolm to Guysboro, and proceeded to Canso.

The haddock season closed at Canso, and boats hauled up. The haddock fishing season was poor owing to fish being scarce and the weather during the month of December rough.

January 13. Cruising westward arriving at Goldboro.

January 14. Proceeded westward with ss. *Westport III*, in tow, arriving at Sheet harbour at 3.55 p.m. Breaking ice in Sheet harbour to release pulp steamer *Urter* frozen in at West River.

January 15. Breaking ice in Sheet harbour. Broke schooner *Cecial B* clear of ice, and moored schooner to Government wharf.

January 16. Breaking ice in Sheet harbour and West River.

January 17. 1 p.m. released pulp steamer *Urter* from ice. Steamer proceeded on her voyage.

January 18. Breaking ice in East river, and opening up navigation to steam boat wharf.

January 20. Proceeded westward with the ss. *Westport III* in tow, arriving at Halifax at 5.25 p.m.

January 25. Cruising towards Lunenburg. 2.15 p.m. breaking ice in Lunenburg harbour and releasing vessels.



January 27. Proceeded to pull off stranded schooner *Dorothy M. Smart* ashore on west side of harbour. Several attempts were made, parting hawser.

January 31. Succeeded in pulling off stranded vessel.

February 1. Moored ship at Railway wharf, Lunenburg. Ship laying up for refit.

#### FISHERIES PATROL SERVICE

MILDRED MCCOLL—CAPTAIN WILLIAMS

Patrol boat *Mildred McColl* was placed in commission April 30. She was engaged in patrolling the waters of Halifax and Guysboro counties during the months of May, June and July, preventing illegal lobster fishing and assisting the local overseers in the performance of various duties. In June and July, also again in November, she was called upon to render assistance in Lunenburg county—an adjoining district.

On August 3, she proceeded from Halifax to Pugwash, Cumberland county, to supervise lobster fishing in the Fall fishing district, Northumberland straits. En route, various patrol work was performed along the coast. Arriving at Pugwash, before the opening of the season, buoys were taken on board and the line dividing the spring and fall seasons was marked off. The work done by the *Mildred McColl* in this district kept illegal fishing at a minimum. This fact is well recognized by those interested in the industry.

Daily patrols were made along the lobster fishing boundary line and amongst the fishing boats.

She also assisted in scallop dragging investigations in the vicinity of Wallace.

At the close of the season the boundary line buoys were landed and she proceeded on October 20 to Halifax to take up further work in Halifax county. She was laid up at the Dockyard, Halifax, on January 20.

#### PATROL BOAT "A"—CAPTAIN BAKER

Patrol boat "A" commenced the usual patrol on June 9. This boat gave very satisfactory service during the last year, and kept up a steady patrol along the shore between Pubnico and the head of the Bay of Fundy, and was of great assistance in keeping down illegal lobster fishing.

#### REPORT OF J. F. CALDER, DISTRICT No. 1, NEW BRUNSWICK, FOR THE YEAR 1925

This district comprises the counties of Charlotte, St. John, Albert, and the Bay of Fundy watershed of Westmorland county.

The following is a brief summary of the catches and the marketed values for the present year:—

Cod.....	19,364 cwt.	Marketed value.....	\$ 39,627
Haddock.....	16,539 "	" "	29,532
Hake.....	59,643 "	" "	74,602
Pollock.....	28,804 "	" "	38,022
Halibut.....	131 "	" "	1,829
Flounders.....	722 "	" "	2,311
Skate.....	215 "	" "	587
Plaice.....	10 "	" "	10
Herring.....	171,812 "	" "	187,486
Sardines.....	158,259 brl.	" "	1,016,325
Alewives.....	17,800 cwt.	" "	38,920
Salmon.....	3,150 "	" "	56,627
Shad.....	3,600 "	" "	38,368
Smelts.....	366 "	" "	7,118
Clams.....	11,507 brl.	" "	62,812
Cockles.....	201 cwt.	" "	563
Lobsters.....	5,701 "	" "	195,153
Winkles.....	1,091 "	" "	5,008
Dulse, green.....	3,800 "	" "	6,840

The total marketed value of the catch is \$1,854,792, against a valuation of \$2,022,373 for the catch of 1924.

#### COD

There was a considerable falling-off in the catch of cod as compared with the previous year—19,364 cwts. were taken as compared with 29,124 cwts. for 1924. However, the catch of cod for the present year was well up to the average—the 1924 catch was exceptionally large.

#### HADDOCK

Haddock were quite plentiful. The catch was 16,539 cwts., while 14,892 cwts. were taken during 1924. The haddock catch was the best for many years.

#### HAKE

A very large catch of hake was made, the total yield being 59,643 cwts. as compared with 49,356 cwts. for the previous year.

#### POLLOCK

There was a very satisfactory increase in the catch of pollock as compared with the previous year—28,804 cwts. were taken, while 8,391 cwts. only were taken during 1924. The catch for the present year was practically the same as the 1923 catch. This fishery was practically a failure during 1924, and it is reassuring to be able to report a satisfactory increase in the catch for the present year.

#### HERRING

The catch of herring was 171,812 cwts. Most of these fish were smoked by the fishermen at Grand Manan. While these figures show a fairly large catch, the supplies in the weirs were practically unlimited. The catch represents the quantity that the fishermen were able to make use of. A very large pack of smoked herring was made at Grand Manan, and is being marketed at rather unsatisfactory prices. The market opened with the boxed herring selling at a price equivalent to  $3\frac{1}{2}$  cents per pound for the cured article; later the price dropped to  $2\frac{1}{4}$  cents per pound. It is to be regretted that there is not a larger market for our smoked herring. These fish are put up in the best possible manner, and ready market should be found for a large pack. However, whenever a large pack is made, the market becomes glutted, prices drop, and the fishermen generally get a less amount in the aggregate for a large pack than they do for a small one.

#### SARDINES

One hundred and fifty-eight thousand two hundred and fifty-nine barrels of sardines only were sold, as compared with 269,643 barrels in 1924. These figures have no relative bearing as to the quantity of sardines that were sold in the weirs. There is no question but that there were more sardine herring in the weirs during the past year than in any other year in the history of the industry. Sardine herring were also exceptionally plentiful along the coast of the state of Maine. The state of Maine fishermen offered their catch at a less price than the export price on our side—\$10 per hogshead—and as a result of the same, sold their own packers a much larger portion of the supply than during any previous year. It must not be inferred from this that our weir fishermen were the actual losers by the "sale for export" price condition in the licenses, because if there had been no such restriction, it is not at all likely that the price would have been over \$2 per hogshead. Consequently, while our fishermen would have

sold a much greater quantity during the year if there had been no such condition in the licenses, at the same time they would have received less money than what they obtained from the quantity that was sold.

#### SALMON

There was a satisfactory increase in the salmon catch for the present year—3,150 cwts. being taken as compared with 2,750 cwts. for 1924.

#### CLAMS

Eleven thousand five hundred and seven barrels of clams were taken, as compared with 23,907 barrels for the previous year. The quantity of clams sold during the year is governed altogether by the demand for this fish. During 1924 the market for canned clams was good and the canners, on both sides of the international boundary line, bought considerable quantities from our fishermen. This year the market was not very good, with the result that a limited amount only were bought.

#### SHAD

The spring run of shad was exceptionally good; 3,600 cwts. were taken by the fishermen at Lorneville and St. John Harbour. This is the largest catch that has been made for a great many years. The fishermen made good money during the short time they were employed at this branch.

#### ALEWIVES

There was a slight increase in the alewife catch as compared with the previous year—17,800 cwts. were taken, as compared with 15,000 cwts. for 1924.

#### LOBSTERS

There was a slight falling off in the lobster catch; 5,701 cwts. were taken, against 6,022 cwts. for the previous year. The price, however, was better than that for 1924 and \$195,153 was realized as compared with \$173,969 for the previous year.

### REPORT OF INSPECTOR A. L. BARRY, DISTRICT No. 2, NEW BRUNSWICK, FOR 1925

This district covers that part of New Brunswick bordering on the bay Chaleur, gulf of St. Lawrence, and Northumberland strait, and including the counties of Restigouche, Gloucester, Northumberland, Kent, and the strait side of Westmorland county.

The total marketed value of the fisheries for 1925 was \$2,909,562, as compared with \$3,327,738 for the previous year, a decrease of \$418,176. The following table shows the comparison of this year's fishing to the previous year:—



		1925		1924	
		Quantity	Value	Quantity	Value
			\$		\$
Cod.....	cwt.	186,180	472,386	230,042	571,416
Herring.....	"	200,898	197,868	217,054	200,528
Mackerel.....	"	16,707	63,968	13,845	49,166
Alewives.....	"	16,395	24,323	5,630	6,881
Bass.....	"	477	6,820	868	11,520
Salmon.....	"	26,377	231,825	30,317	363,583
Smelts.....	"	46,326	711,031	63,748	841,414
Lobsters.....	"	60,193	874,569	62,281	1,029,595
Haddock.....	"	1,647	3,014	1,746	3,798
Hake and cusk.....	"	7,249	12,544	7,622	14,816
Trout.....	"	161	2,266	179	2,360
Eels.....	"	406	2,750	221	2,050
Tom cods.....	"	13,056	41,517	13,375	50,209
Clams and quahaugs.....	brl.	7,989	25,614	9,537	40,678
Oysters.....	"	12,038	88,693	17,201	103,040
Shad.....	cwt.	2,222	14,284	3,704	35,797
Flounders.....	"	231	704	28	42
Perch.....	"	146	876	22	64
Scallops.....	"	11	88		
Mixed fish.....	"	45	45	94	94

## COD

There was a decrease of 43,862 cwts. in the catch and a corresponding decrease in value. Cod were very plentiful in bay Chaleur but owing to the rough weather of July and September full advantage could not be taken of the large run. The price has held up right through the year, the fishermen receiving as high as \$8 per quintal and with the demand good.

## HERRING

There was a decrease both in the catch and value of herring. The spring run was a little late, which made it inconvenient for the lobster fishermen who were in need of bait, but on the whole, they were very plentiful around our shores and had the weather proved favourable a much larger catch could have been taken.

## MACKEREL

This shows an increase both in catch and value. More boats were fished than during the previous year.

## ALEWIVES

The catch of alewives was more than double that of the previous year with a large proportionate increase in value. There was a good demand all through the fishing season.

## BASS

It is to be regretted that the bass fishing is losing its importance in this district. In the Miramichi river the catch has fallen away to practically nothing. The fishermen lay the blame to the smelt nets, over two thousand of which are set in the Miramichi river and bay alone. Although most of the fishermen obey the regulations and throw the small bass back into the water, in real cold weather, they do not revive once the frost strikes them.

## SALMON

There was a slight decrease in the catch of salmon, but the price held up well throughout the year and they were always in good demand. The net fishing along bay Chaleur was very good during the early part of the year but the drifters off the Miramichi had a very lean year. Great destruction was also caused by the seals, one drifter having reported fifty salmon heads in his net after one night's fishing. The shipment of frozen salmon overseas always insures the fishermen a ready market for their catch.

## SMELTS

The smelt catch for 1925 was about two-thirds of the catch for 1924. The December catch for 1925 was real good and the decrease of the year is accounted for by the failure of the January and February catch for the 1924-25 smelt season. There was a decrease in the number of fishermen this year, owing probably to the fact that so many had lost money the year before. The introduction of the box-net at Cocagne and Buctouche has improved the fishing by doing away with a large number of spearing shanties which were operated by spearmen who were too poor to provide themselves with a bag-net. These shanties were operated on the ground that was very favourable for the use of the box-net and as a result many of the former spearmen have provided themselves with this excellent equipment and are doing well.

## SMELT GILL-NET FISHING

Considerable opposition is developing among the fishermen to the use of the gill-net before the opening of the bag-net season. Gill-nets were blamed for the scarcity of the smelts at Richibucto and Shediac. The fishermen believe that they scare the smelts off the fishing grounds. It is a well-known fact that seals and gulls have a daily feast out of these nets and as the fish thus taken are generally large, the cream of the catch is destroyed. The fishermen at Buctouche voted almost to a man to do away with the gill-net fishing and their request was granted. It is expected the same thing will occur at Richibucto next fall and it is hoped to soon do away with the early gill-net fishing in the entire district.

## LOBSTERS

The catch was slightly under the previous year, as well as the value. The catch differed greatly in different parts of the district. The spring fishing which is done in the northern part was very successful, whereas the fishing in the southern part of the district which does not begin until the middle of August was somewhat of a failure. The number of lobster packing canneries decreased from 143 to 138, but each year shows a great improvement in the canneries, three new steam boilers and four retorts being reported in the district of one overseer alone. The prevention of illegal fishing and packing of lobsters is still a great problem which we have to contend with in certain parts of this district, and the blame must rest with certain dealers who continue to buy illegal catch and pack. Until they make up their minds to stop this illegal traffic they need not complain about the scarcity of the lobsters.

## HADDOCK

There was a considerable decrease in the catch and value of haddock. This, however, is not one of the important fisheries of this district.

## HAKE AND CUSK

About the same as last year as to catch and value.

## EELS

Quite an increase was made in the catch of eels, mostly from the Big Tracadie river. They were reported scarcer on Eel river and the reason is laid to the fact that the cranes and herons are destroying the smaller ones.

## SHAD

There was a decrease in the catch of shad.

## TOM CODS

About the same quantity of tom cods were taken and the value is less than that of 1924. The introduction of the box-net at Cocagne and Buctouche has led to the working up of quite a tom-cod industry there, where formerly there was none.

## TROUT

The catch of trout was about the same as the year before.

## CLAMS AND QUAHAUGS

The lack of a ready market for these shell fish caused a falling off in both the catch and value. A start was made in canning the latter in the southern part of the district. The fish seem to be quite plentiful but the fishermen could hardly make a day's wage at the price offered.

## OYSTERS

The catch of oysters also fell off with a proportionate decrease in value. Buctouche and Malpeque oysters still find a ready market but their high standard is being destroyed by oysters being shipped indiscriminately as these brands. It would seem that some provision for standard barrels with the name of the shipper on the outside would be an improvement toward the betterment of this industry. There is no lack of fish and all it needs to make a good financial return to the fishermen is the proper grading of the oysters before shipment.

## SCALLOPS

No great steps have yet been taken to develop this fishery, the beds of which are without doubt very extensive in bay Chaleur. One fisherman has intimated that he intends to operate on a large scale during the coming year and it is hoped that if the fishery turns out as he expects others will follow.

With the exception of poaching for lobsters and salmon on the Miramichi rivers the fishery regulations have been pretty well adhered to. Prosecutions dropped from 42 in 1924 to 17 in 1925. A number of stiff fines for illegal salmon traffic on the Miramichi is expected to have the desired effect toward the protection of the salmon going up to spawn. The prosecutions for the year were as follows:--

Illegal fishing, 9. Having illegally caught fish in possession, 3. Fishing with illegal mesh, 2. Neglect to remove pickets from river, 1. Interference with a fishery guardian, 1. Bringing berried lobsters ashore, 1.



Confiscations, however, arose from 97 in 1924 to 111 in 1925. This increase is accounted for by the increased activity of the guardians in clearing out the illegal salmon rigging in the Miramichi rivers.

There was a great demand among the fishermen of the southern lobster district for an early opening of the lobster fishing season. This being refused by the department they proceeded to take the law into their own hands, and as a result much rigging was set out and a large number of lobsters taken. The prompt work on the part of the officers who seized nearly all of the first catch (about five tons) when they were laying in floats to be taken up, put a stop to any further activities until the opening of the season. Seizure of much lobster gear was also made when the fishermen persisted in setting out after the close of the fishing season in the northern district.

About twenty new boats were added to the vessels already in operation, although considerable damage was done during the storm of June last, and it is regretted that in bay Chaleur one boat was lost with all hands, numbering four, aboard.

I am pleased to report that the owners of the saw mills are taking the necessary steps to keep the refuse from getting into the streams. No wilful negligence has been reported and all seem to take kindly to the suggestions of keeping the streams unpolluted.

The fishways are all in fairly good working order, with the possible exception of the one at Kouchibouguac, which was promised attention by the directors last fall.

Last July, for the first, an attempt was made to destroy the seals which prowl about the mouth of the Miramichi river causing great destruction to the salmon and salmon nets. A Lewis gun, a couple of rifles and a considerable amount of ammunition was received from the Department of National Defence and with the aid of an ex-service Lewis gunner considerable destruction was caused to the groups of seals sunning themselves on the beaches in low water. The results were soon observed in the scattering of these groups. In all about 5,000 rounds of ammunition were expended. It is hoped, that during the coming year, the work will again be taken up only at a much earlier date so as to meet the large flocks of seals when they are first coming up the bay. This destruction must not be allowed to cease as the seals are getting more plentiful and bolder each year. What were once valuable fishing stands down the bay are now useless as the fishermen cannot afford the destruction of their nets.

#### REPORT OF INSPECTOR H. E. HARRISON, DISTRICT NO. 3, NEW BRUNSWICK, FOR 1925

District No. 3 comprises the counties of Kings, Queens, Sunbury, York, Carleton, Victoria and Madawaska.

Practically all fishing in this district is carried on during the open water months, consequently, the quantity of fish taken through the ice is not of much account, usually. The larger waters in this district shed their coats of ice rather earlier than usual. The St. John river opened about the first of April, and a steam boat reached Fredericton from St. John the 5th of that month. The weather during that month was cloudy and rather cold, and the spring freshet reached its highest point the first week in May, and the surplus water had run off by the last week of May, but heavy rains in July brought it back again to a considerable height.

The first fresh fish seen in the Fredericton market was on the 4th of April, which were alewives taken in the Oromocto river, near Fredericton. A few shad

were taken in the lower St. John river by the 15th of May, and there was a fair run of salmon by the 24th of May. Shad do not ascend the Southwest Miramichi river above tide water; alewives do not reach the water of my district until about the first of May, and salmon and sea trout little before the 20th of May.

The quantity and value of alewives taken was a little better than in 1924. The local demand for this fish was better than for some years previous, but, because of the absence of a market of any value during recent years the fishermen had allowed their nets to deteriorate, and they were not in a position to supply a very large quantity, as most of them have been catching only about enough to supply their own homes with fresh, smoked and salted alewives. Alewives were reported as being very plentiful in the lower waters of the St. John river and tributaries; a fair run in the central waters, and a very large run in the Southwest Miramichi river.

The bass fishery was of no importance in 1925. Just at the close of the year there is evidence that this fish made its appearance in fairly large numbers in the Belleisle bay district, and it is probable that the catch of 1926 will show better results, judging by the number of licenses issued after the 1925 season was about over. It is twelve years since a respectable catch of bass was made in the St. John river waters, and that length of time, or longer, since a previous good catch was made. Why these periodical fairly good runs I cannot say.

There was a slight decrease in the quantity of eels taken, with a comparatively large increase in value. If the fishermen could always obtain the price that they did for eels in 1925, it is probable that they would prosecute the fishery vigorously, to the advantage of themselves and the shad and salmon fishermen, as eels destroy many netted shad and salmon. The St. John river waters appear to be polluted with eels.

This fishery for mullets was prosecuted vigorously during 1925, and the increase in both quantity and value was proportionately good. This fishery has developed during recent years, and I trust that it may continue. The catch is shipped to the United States markets, as there is very little use for this fish, in my district, other than to feed to the farmers' hogs.

There was a shrinkage of about 50 per cent in the quantity and value of pickerel taken and sold during the year. The only reason given me for this is that the fishery was not prosecuted as steadily as during 1924 because of less demand for pickerel. It may be that certain consumers' tastes turned from this fish to mullets. Because of the comparative inactivity in the pickerel fishery during 1925 it ought to be better when again taken up, as the fish will have a chance to grow and to multiply.

It is very gratifying to me to be able to report another fair increase in the quantity of salmon taken this year. While the increase is not so great as that of 1924 over 1923, it is considerable, and, it seems to me, is fair evidence that we are receiving considerable benefit from the hatcheries that are making it possible to place large numbers of young salmon in the different waters, and, possibly, evidence of fairly efficient protection for the growing and grown fish on their ascent to the upper waters to reproduce. At times we are told that the fishery officers and guardians do not do their duty, and that salmon are illegally killed in large numbers. Such reports come usually from persons who have not had unusually good success in salmon angling, and because of that condition it is assumed that some persons have recently cleaned out the waters with a net or a spear. No fishery officer would, or should, be so foolish as to suggest that some salmon, possibly a considerable number in some instances, are not killed illegally, but, considering the number of men employed and the great area of waters to be protected, it is a wonder that many more salmon are not taken by other than legal methods. While it is true that there was a considerable increase in the number of licenses and permits issued in 1925, no doubt encouraged by the fairly



successful season of 1924, and the fact that it costs only three cents and a sheet of paper and an envelope to secure a license or permit, if the applicant is entitled to such, several persons secure a license or permit, and if they do not wish to use it, or, if after trying their luck for a short time they do not have any success, the operation is discontinued and the fishery is not damaged. I am advised by my officers that such is the case in many instances, and that the larger issue of licenses and permits is not evidence that excessive salmon fishing is carried on. The increase is fully accounted for in the two more important sub-districts—Kings and York counties,—so far as the increased catch is concerned, while the increase in the number of licenses and permits issued was in the counties of Kings, York and Carleton, with some decrease in the counties of Queens, Sunbury and Victoria. It is interesting to note that the average weight of salmon taken was considerably better than that of recent years. A large percentage were from ten to twenty pounds per fish; a considerable number from twenty to twenty-five pounds and some from twenty-five to thirty-two pounds, which to a large extent accounts for the increased total weight. Fishermen complained of the unfavourable season, while the fishery was in operation, but it appears to have been fairly successful, and was good enough, considering the fact that it is the duty of the department's officers to see that a fair percentage of fish reach the breeding waters, and it appears to me that this is being accomplished. I should like to repeat what I have stated on previous occasions that I think it would be the part of wisdom to require that the meshes of salmon nets be not less than 6-inch extension when in the water, as I feel that it would allow more of the small fish to escape the nets for another year, or longer, and eventually benefit the fishermen, and there would be less complaint from the salmon anglers about salmon taken by them being "net-marked."

The catch of shad in 1925 indicates one of two things, either that fishery is in a very healthy state at present, or the nets and weirs in St. John harbour were not able to get a fair proportion, but I understand that the harbour fishermen did have a very large catch, consequently, it would appear that the fishery is in good condition. I am sure that all hope it may continue so. The catch in 1924 was nearly 100 per cent greater than that of 1923, and the 1925 catch was more than 25 per cent more than that of 1924, while the respective issue of licenses for the years 1923-24 and 1925 was 219, 221, and 230. The districts where notable increases were made are the extreme south and north of the St. John river waters, viz., the Kennebecasis river and the St. John river at the Grand falls. In the former area the increase over 1924 was more than 100 per cent, and in the latter area it was more than 250 per cent, while in the central area, viz., Queens, Sunbury and York counties (Carleton county has not any shad fishery), the catch was a fraction less than during 1924. Shad appeared in the lower St. John river waters the first week in May, ten days to two weeks earlier than usual, and the quantity taken during the season was such that Overseer Bell reported that the fishermen ceased operations before the season ended or the run was over, as the market seemed to be glutted with fish, and, when the water gets low and warm, eels become very troublesome, and, fishing as they do in these waters with stationary nets, a great many shad are destroyed before the fish can be removed from the nets. A somewhat like condition, so far as a market for shad was concerned, prevailed in Overseer Robertson's district, notwithstanding only four nets were operated, and the season there was very short—it was June before the fish reached the Falls and the season was very late—the catch was proportionately large and the fishermen found it difficult to dispose of a portion of their catches.

It is possible that some of the shad taken at the falls had spawned before they were taken, and quite probable that all were quite soft after having travelled so far from the sea to spawn, so that they would not be as firm and



fine flavoured as when taken from the lower river waters, and particularly from the cold salt water of the harbour.

The sturgeon fishery shows a still further decrease; more than 30 per cent less than in 1924 and 50 per cent less than in 1923. More nets have been operated during the past three years than in many former years, and it may be that production is not able to keep up with destruction. There is a great number of small sturgeon in these waters, fish running from 18 inches to 3 feet long, but they appear to grow very slowly, and these are considered of no value, even if it were legal to kill them. The quantity of eggs, or caviar, taken was very little, and the fishermen said they were not offered any price for it, consequently none was sold.

The total weight and value of the commercial fishery of this district during the years 1924 and 1925 are as follows:—

Year	Cwt.	Value.
1924.. . . . .	3,716	\$33,698
1925.. . . . .	3,975	34,235

an increase of 259 cwt. and \$537 for the year 1925.

## FISHING MATERIAL USED

Year	Value.
1924.. . . . .	\$15,676
1925.. . . . .	14,425

The total weight and value of the domestic fisheries for the same periods is as follows:—

## DOMESTIC FISHERIES

Year	Cwt.	Value.
1924.. . . . .	473	\$8,845
1925.. . . . .	454	8,780

a slight decrease in both weight and value in 1925.

It appears from the reports of the local officers that trout were not so plentiful, in some districts at least, as they were the previous year. While this may be correct, it is not to be accepted as proof positive that trout were as scarce as the contents of the fish basket might indicate. Trout anglers reported to me that fish seemed to be scarce, while at the same time they complained of weather and water conditions. The weather was cold and the waters were unsteady in levels, therefore, it is quite possible that trout were not easily tempted with either bait or artificial fly. If the latter should prove to have been the trouble it was a good thing for trout, and should be better for the anglers this year, should conditions be favourable for angling. It appears to me that there is not as much trout fishing after the month of June, in some districts at least, as in former years. The reason for this is that some new salmon pools have been found, or some salmon have been taken on certain waters, and in such districts the little trout is left alone after the end of June and the salmon angling fever takes hold. This also is a good thing for the trout, as the salmon is pretty well able to take care of himself, so far as rod and line fishing is concerned. The St. John river itself does not furnish any trout fishing, neither sea nor speckled trout, but there are many tributaries, particularly of the Upper St. John river, where very good speckled trout fishing may be enjoyed.

Salmon angling on the St. John river, on those parts where this sport is followed up, was very fair in some districts and indifferent in others. It is sometimes difficult to account for such—the anglers usually account for it by

stating, and spreading it broadcast, that the fishery officers are not doing their duty and that salmon are allowed to be slaughtered with net and spear—but it is well known that salmon will not take a fly or artificial lure nearly as well under some conditions as he will under others, or, take two pools with an equal number of salmon resting in each and one may produce fair or good angling and the other may not produce any on certain days, while the reverse may be the case on another day. While salmon angling was not good at a certain pool near Fredericton in 1925 it was excellent in 1923, but it was not good on pools farther up the St. John in 1923, but it was very good in 1925, and the fish that were taken on the pools farther up the river had to pass through the pool near Fredericton, therefore, it is mostly a matter of weather and water conditions when the fish are resting, or passing through the pools, it seems to me. Conditions were very similar in the Tobique and Miramichi rivers districts, but in the latter part of the season angling was very good on part of my water of the latter river, but the fish did not reach the upper waters before the season closed, but large numbers went up late in the fall, as the water was very high. The members of the Tobique Salmon Club rather feel that they do not get a fair portion of the salmon that ascend the St. John river, and the Tobique river to spawn. I do not know how to remedy this condition, unless it be to practically stop all salmon netting between Fredericton and the mouth of the Tobique river. If we had more assistance in the way of guardians it might be that we could save a few salmon from illegal killing, but I think that aspect is not serious during recent years. The number of salmon killed by the members of the club referred to is not large, but, I understand that this club does practically all of their angling in the months of June and July, with none, or very little in August, and their camps are closed August 15 every year, therefore, it will be observed that their season is short, whereas other anglers carry on until the last of August and the 15th of September, and some to the last of September to their discredit, as there are not any clean and bright salmon in the rivers at that time. I should like very much if the salmon angling season were to end not later than the 15th of September, and it might be better if it were to end the last of August, and I should like to see all netting for salmon end the 15th of August in each year. It seems to me that both net fishermen and anglers ought to be satisfied with a reasonable period of fishing.

#### FISHWAYS

The fishways on the different rivers and streams are in good condition, but several of them are of minor value. Most of them have been built to assist salmon in reaching the upper waters of certain streams, but these streams are not what they were in olden times, and very few salmon try to ascend these waters now. Some were built to assist trout in passing obstructions, but I have yet to learn that they are of any benefit in that respect. Some concrete work was done at the lower end of the fishway (also of concrete) on the Nashwaak river at Marysville last season, and it is hoped that all of this work is of a permanent nature, so far as it is possible to make it. A run of salmon in the fall—apparently the only time they ascend the Nashwaak river—now has no difficulty in passing the dam. The dam at Forest City, York county, was rebuilt last season and the fishway was also rebuilt by the owners of the dam—"Eastern Pulpwood Company"—and it is believed that there is now a very efficient fishway at that place, at least it is pronounced so by an officer of the New Brunswick Government, Department of Lands and Mines. This fishway is said to be required to allow the landlocked salmon of Grand lake to descend to the waters below the dam to spawn, and later return to the lake, which is large, and where the fish remain during the rest of the year.

## PROSECUTIONS

Prosecutions during the year numbered nineteen, of which seven were for water pollution and the balance for illegal fishing, two of which, one for pollution and one for illegal fishing, were dismissed by the magistrates. Fines of \$400 were imposed of which \$275 was paid to the Receiver General of Canada; \$15 to the Tobique Salmon Club as complainant and prosecutor; \$90 in suspended sentences, and one fine of \$20 still unpaid.

## CONFISCATIONS

There were twenty-six confiscations of materials of an approximate value, placed at a low value, of \$95, \$68 of which has been collected in sales, with a small amount of the materials still to dispose of, when possible, and materials, such as spears, torches, torn nets, etc., to the approximate value of \$33 destroyed.

# REPORT OF S. T. GALLANT, INSPECTOR OF FISHERIES, PROVINCE OF PRINCE EDWARD ISLAND AND MAGDALEN ISLANDS, FOR 1925.

## PRINCE EDWARD ISLAND

The total marketed value of the fisheries for the province of Prince Edward Island for the year 1925 was \$1,598,119, an increase over that of 1924 of \$396,347.

The following table is interesting as showing the comparison between the catch and its marketed value for 1925 and that of the preceding year:—

Kinds of Fish	1924		1925	
	Quantity caught	Marketed value	Quantity caught	Marketed value
		\$		\$
Cod..... cwt.	41,036	81,885	61,483	150,135
Haddock..... "	418	554	968	1,652
Hake and cusk..... "	15,430	27,081	14,939	22,981
Herring..... "	37,716	58,664	64,942	83,703
Mackerel..... "	7,646	37,448	6,220	23,246
Perch..... "	6	6		
Halibut..... "			21	210
Alwives..... brl.	300	600	84	225
Salmon..... cwt.	62	1,550	90	1,800
Smelts..... "	14,273	133,747	17,595	142,496
Trout..... "	91	1,092	107	1,328
Albacore..... "			975	4,875
Caplin..... brl.	90	270	138	552
Eels..... cwt.	785	7,835	320	3,311
Tom cod..... "	1,295	2,911	2,555	6,336
Clams and quahaugs..... brl.	797	4,973	1,560	9,758
Oysters..... "	7,945	63,840	5,278	52,780
Tongues and sounds..... cwt.	63	1,458	48	960
Cod liver oil, medicinal..... gal.			25	50
Cod oil..... "	2,050	557	7,030	2,109
Fish oil, other than cod oil..... "			1,800	900
Lobsters..... cwt.	65,893	777,301	78,570	1,088,712

Codfish were plentiful early in May, which is unusual for this part of the coast, but as practically all the fishermen were engaged in lobster fishing, this fishery could not be taken advantage of until the month of June. Fishing was then carried on very successfully, and there was an increased catch and an increase in the marketed value.



## HADDOCK

There was an increase both in the catch and in the marketed value.

## HAKE AND CUSK

There was a decrease both in the catch and in the marketed value.

## HERRING

Fishing opened early in the season and lobster packers succeeded in securing a plentiful supply of bait. There was an increase in the catch and in the marketed value.

## MACKEREL

Mackerel were scarce and fishing was not carried on as extensively as in other years. Prices were poor, and there was a decrease in the catch and in the marketed value as well.

## SALMON

This fishery was carried on only at St. Peters, and there was a marked increase in the catch. I am anticipating a further development of this fishery in Richmond bay and Alberton bay.

## SMELTS

The season opened for gill-net fishing on October 15, and good catches of smelts were made until December 1, when the ice began to make on the rivers and interfered with fishing.

The bag-net fishing season opened on December 1, and in some localities some of the largest catches in the history of the province were taken.

There was an increase in the catch and also an increase in the marketed value.

## LOBSTERS

In 1924, to unfavourable weather conditions, which continued during the month of May, was attributed the reason for such a small catch, but in 1925, with favourable weather conditions from the outset, a large catch was expected; yet, as you will see from the above table, the increase was not very great. My honest opinion is that the supply of lobsters is gradually on the decrease, and I attributed said decrease to the fact that the work since the war has been scarce and lobster fishing, as a means of livelihood has been prosecuted to a much greater extent than in former years. It would, therefore, seem as if over-fishing is the cause of the gradual decrease that has taken place in the last two seasons.

It has also been noticed that on certain parts of the coast a very large quantity of lobsters from four to six inches in length are being packed; if this practice is pursued it can produce only one effect, viz., a decrease in the catch from year to year, as there will be very few lobsters left to mature. There was a large increase in the catch of jumbo lobsters, but I may say that it has only been during the last two or three years that these large fish were taken in any quantities. What effect this will have on the future of this our best fishery is difficult to foreshadow.

I believe steps should be taken at once to make "size limit" one of the regulations. I do not think there would be any great objection on the part of the fishermen or packers if a six-inch limit were established as a beginning; if

this were done, an increased catch would result in the course of a few years, and I am of the opinion that the fishermen would then ask for a size limit of seven or eight inches. Good results are sure to follow if a size limit be adopted.

## OYSTERS

There was a decrease in the catch and in the marketed value as well. Although there was a decrease in the quantity taken, this does not mean that the supply is being exhausted but may be attributed to the fact that the buyers have taken special care in selecting oysters that would meet the demands of the markets, and as a result, Prince Edward Island oysters were in demand up to the end of the season and good prices were realized, both shippers and fishermen being well paid for their efforts.

Never in the history of the province were East river and tributaries, West river and tributaries, Seal river and Vernon river so well stocked with small oysters. Special mention might be made of an oyster area at Cranberry wharf, East river, which was cleaned in the summer of 1924, and which is now literally covered with oysters of this summer's set. The cleaning of this area was largely an experiment, but it has proved a great success.

In Richmond bay, one man was successful in securing four barrels of good-sized oysters at a place called Bideford river, a tributary of Richmond bay. Some oysters are to be found also at the heads of the tributaries; it would appear from this fact that the spring freshet cleans the upper part of the rivers, giving the spat a chance to set, but it is different in the bay proper, which in years gone by was highly productive, and on these areas no live oysters are to be found.

A man, who has kept in close touch with the oyster fishery in Richmond bay for the past twenty-five years, writes as follows: "Personally I do not believe that the oyster beds will ever be productive until they are cleaned. There is now in Bideford river a sufficient quantity of oysters to seed all the oyster areas if the beds were cleaned to allow the spat to set."

Cleaning should be done in the month of June, as oysters extrude their eggs in the month of July.

## FISHERIES PROTECTION SERVICE

The usual attempts at illegal lobster fishing were made and we were forced to employ two additional patrol boats.

The total number of confiscations for various violations of the fishery regulations during the year were 34.

The total number of prosecutions were 9.

The following seizures of lobster gear were made:—

Year.	Rope. (fathoms)	Traps.	Anchors.
1925....	13,998	2,798	40

PROTECTIVE SERVICE BY PATROL BOATS "RICHMOND," "DAISY," "UPPERHAND," ETC.

The patrol *Richmond* was in charge of Captain Baglole and Assistant Fred McKinnon; patrol *Daisy* in charge of Captain Costain, and the patrol *Upperhand* in charge of Captain Henry Doyle. The captains and their assistants were most zealous in the discharge of their duties and did all in their power to suppress illegal fishing.

## REMARKS

During the summer fishways were built at Laird's milldam, at the head of Morell river; in Campbell's milldam, at head of New Glasgow river; at Dixon's milldam at DeSable; and in the milldam at the head of Vernon river. This will permit the fish to ascend the head of the streams to spawn, and it is expected that these fishways will increase inland fishing in the streams above mentioned. Should they prove as successful as is anticipated, many of these fishways will have to be built in different parts of the province.

## MAGDALEN ISLANDS

The total marketed value of the fisheries of the Magdalen islands for the year 1925 was 714,250, an increase over that of 1924 of 124,753.

The following table gives a comparison between the catch and marketed value of 1924 and that of 1925:—

Kinds of Fish	1924		1925	
	Quantity caught	Marketed value	Quantity caught	Marketed value
		\$		\$
Cod..... cwt.	53,144	153,141	70,020	176,423
Herring..... "	119,748	77,006	153,780	92,651
Mackerel..... "	37,515	121,588	41,105	112,024
Smelts..... "	50	150	40	120
Eels..... "	30	210	20	140
Clams and quahaugs..... brl.	2,175	12,800	2,700	16,300
Lobsters..... cwt.	17,605	223,123	20,601	309,718
Marine animals, seal and hair..... No.	109	130	912	1,185
Squid..... brl.			75	750
Tongues and sounds..... cwt.			25	175
Cod oil..... gal.	3,000	1,185	8,781	3,410
Seal oil..... "	327	164	2,604	1,354

## COD

There was a good demand for cod and this fishery was prosecuted to a greater extent than last year. There was an increase in the catch and in the value.

## HERRING

Herring were very plentiful, and there was an increase in the catch and in the value as well. A large part of the catch was smoked, and as the fish so treated were of a superior quality, the demand was constant and good prices were realized.

## MACKEREL

There was an increase in the catch and a decrease in value. On account of transportation difficulties it is impossible to market these fish in a fresh condition; consequently, they have to be split and salted, and as the catches taken are unusually large it is practically impossible to prepare them properly. As a result the fish are of an inferior quality and can command only a low price.

## CLAMS

There is an increase in the catch and in the marketed value.



## LOBSTERS

There was an increase in the catch and in the marketed value as well.

At the request of fishermen and packers the opening date of the lobster fishing season was changed from May 1 to May 10, and from interviews with both packers and fishermen I learn that the above change has been satisfactory to all.

## REMARKS

The mail boat *Lovatt* made her first trip to the Magdalen islands on April 12, the earliest crossing in years. This boat affords splendid passenger accommodation, and the public is well satisfied with the service given. The captain and his crew are very obliging and most attentive to their duties.

## REPORT OF J. B. SKAPTASON, INSPECTOR OF FISHERIES, PROVINCE OF MANITOBA, FOR 1925

The total production of all fish for 1925 shows an increase of 12,342 cwts. over 1924, for an increased market value of \$234,376.

1923		1924		1925	
Quantity	Market value	Quantity	Market value	Quantity	Market value
cwt.	\$	cwt.	\$	cwt.	\$
154,090	1,020,595	177,898	1,232,563	190,240	1,466,939

This increase may be almost entirely ascribed to the increased number of fishermen operating. While there has been a noticeable increase in some varieties of fish, such as whitefish and tullibee, this has been offset by shortage in pickerel catch. This is not confined to any one lake, every lake in the province is relatively alike in this manner.

## MARKETS

Market conditions have been good in most lines, and, over the whole, production show an increase of over half a cent per pound over 1924. Of the more important varieties, pickerel shows the largest percentage of increase in price, three cents per pound. This is offset by the heavy drop in production of 13,533 cwts.

Tullibee shows an increase in price of but a half cent per pound. If, however, a comparison were drawn between the two winter seasons 1924-25 and 1925-26, the difference in price would be much greater. In the former year tullibee was a drug on the market and much of the production had to go into cold storage, and was not actually marketed until the following summer. While the present winter season shows exceptionally good demand and prices, more than double in some instances, three times that of the previous season, but as the bigger part of November and December catch is not marketed until after the 1st of January, this difference in price reflects only partially to the benefit of the 1925 production.

The only species of fish to show a definite decrease in market value is sturgeon, which took a drop of 9 cents. This was caused by large importations of Russian sturgeon during the year for the American markets. It may be stated here that this is not likely to affect the market another year, as the quality of the Russian product is not considered in a class with Manitoba sturgeon and does not meet the requirements of the market.

The following are comparative prices of the chief or most important varieties of commercial fish as marketed in the last three years:—

	1923	1924	1925
Catfish..... per pound	10.0	11.1	10.6
Goldeyes, fresh..... "	5.0	4.4	4.2
Perch..... "	8.6	10.6	11.2
Pickarel..... "	8.4	8.5	11.5
Pike..... "	3.7	3.5	4.0
Sturgeon..... "	47.3	50.0	40.9
Trout..... "	7.5	10.0	9.0
Tullibee..... "	5.5	3.6	4.1
Whitefish..... "	7.1	9.7	9.5
For total catch..... "	6.6	6.9	7.7

*The Pas Sub-district*, comprising all waters north of Lakes Winnipeg, and Winniepegosis and includes the Big Saskatchewan river.

The winter production while considerably increased in whitefish, shows in common with other waters a material decrease in pickerel production. On the whole the catch is slightly smaller per man operating as against 1924. Moose lake produced the greater part of the catch, and those operating there had a good winter.

Clearwater lake, fished for the first time since it was closed in 1913, was a disappointment, there were five men fishing on the lake and they did not secure the 25-ton limit. The supply did not appear to have improved during the twelve years it was closed for commercial fishing.

Cold lake or Kississing lake, was fished for the first time. This lake is situated 120 miles north from The Pas. Fishing was good but a freight charge of 3 cents a pound took a big toll, and only the exceptionally high prices for fish made it a paying venture.

A very limited summer operation for whitefish was entered into on Moose lake, but natural difficulties of navigation (a sand bar across the channel entering the lake) proved an insurmountable barrier to a successful operation. The sturgeon operation on the Nelson was carried on much the same as in previous years, with one additional operator, Skuli Sigfusson. The catch fell considerably short of the previous year. The area between Cross lake and Kettle rapids with a limit of 100,000 pounds all of which was taken early in August, 1924, this year only produced 65,000 pounds. This is ascribed to two causes, the first a late spring which did not permit of commencing fishing until much later than usual, and then an early rise of water in the Nelson with accompanying debris and dirt which made it impossible to keep the nets clean, and as a result all nets were lifted early in July. Purvis Bros. and S. Sigfusson took 21,000 pounds in the Playgreen area.

On the Big Saskatchewan river, Cumberland and Cedar lakes the sturgeon fishing was not as good as in previous years, there were not so many men operating, and the catch per man was smaller. This is partly accounted for by flood waters and resulting dirt and debris, but the local Fishery Officer is of the opinion the fish are diminishing, and should another season show corresponding decreases, steps should be taken to close these waters for a few years.

*Lake Winniepegosis* shows a sharp decline in production for the year, 7,489 cwts., of all fish. This is distributed pretty evenly amongst all the chief varieties the lake produces. Whitefish, pickerel and jackfish (pike) show a decrease of about 15 per cent as against 1924. The higher prices more than recouped the operators for the short catch. With a drop in production of three-quarters of a million pounds as against 1924, the fishermen actually received \$11,076 more for their production.



The area of the lakes that seems to have suffered most is that from the north of Duck bay to the south end of the lake. It is in these waters summer pickerel fishing has been carried on since fall of 1921, and many ascribe the light catch, which really has been gradually becoming more noticeable, particularly in regard to pickerel, for the last three or four years, to this cause and advocate absolute closure of the lake for the summer.

The summer whitefish season on lake Winnipegosis is from the opening of navigation until the 15th of August, with a limit of 1,000,000 pounds. No attempt was made by any of the operators to take any part of this limit.

*Lake Manitoba.*—The total production is slightly higher than 1924, accounted for by 126 additional operators. There is a decline in both pickerel and perch, but all other varieties show a substantial increase. The decline in the pickerel catch is no greater than that of other lakes; it may, therefore, be said that the lake is fairly well holding its own in spite of the exceedingly heavy fishing it is subjected to. While the winter season 1925-26 commenced very favourably with an early freeze up and a good run of fish from the start, a storm and a break-up of the ice on November 26 caused the loss of nearly 3,000 nets in the south part of lake Manitoba. This not only was a great financial loss to the fishermen, but it delayed and disorganized their operations.

*Lake Winnipeg, Summer.*—The whitefish operations show marked improvement in catch over 1924, and when it is considered that one of the five companies, amongst which the 3,000,000 pounds limit of summer whitefish is distributed, did not operate. It may be said to almost equal the season of 1922.

The following are comparative figures for five years:—

1921	1922	1923	1924	1925
cwt.	cwt.	cwt.	cwt.	cwt.
29,270	24,724	14,554	12,311	20,195

In previous reports mention has been made of apparent increased showing of whitefish in what is known as the inner lake, from Swampy island south. This was well maintained during the summer and fall fishing of 1925. It will be seen there is a difference of 3,135 cwts. between the total summer catch of whitefish as recorded in the statistical returns and the above figures. That difference is accounted by whitefish taken in the south end of the lake during pickerel fishing operations.

The lake records another heavy slump in pickerel production, with many more men operating the catch is almost cut in half, 19,530 cwts. in 1924, reduced to 10,626 cwts. in 1925. This follows a drop of 40 per cent in 1924 against 1923. It has been mentioned that all the lakes of the province record a shortage in the pickerel catch. Lake Winnipeg has suffered this to a greater extent than any of the others.

Sturgeon fishing carried on in the bays in front of Berens and Pigeon rivers as well as Travers bay shows a decline in production of nearly 25 per cent, with many more fishermen operating. It is felt the time will soon come when it will be found necessary, in order to safeguard the perpetuation of the sturgeon in the lake, to again close it for a period of years.

Of the winter operations, the large increase in tullibee is outstanding. While the catch was much better, it was only partly responsible for the great difference in the two years' results. Another reason is the much earlier freeze-up last fall, which allowed of a greater percentage of the current winter fish to be brought to railhead before the end of the year. The tullibee operations during the winter season 1924-25 were the worst in years both as to prices and catch. The



present season promises much better; the catch will be above the average and prices exceptionally high, even rivalling the prices obtained in the later war years.

There is a marked increase in the attraction our waters hold for non-residents, as indicated by the recurrent annual increase in angling licenses issued. Lakes Killarney and Rock, a short distance from the American border, are the two lakes most frequented.

The following is a record of increase in non-resident angling permits for five years: —

1921-22	1922-23	1923-24	1924-25	1925-26
18	22	37	118	249

Restocking of lakes in the southern and western areas of the province with pickerel fry from Gull harbour hatchery was continued as in former years. Lake Killarney also received an allotment of 600 small-mouthed black bass, obtained in exchange from the Fish and Game Commission for North Dakota.

There were fifty-three prosecutions in the province for various offences against the fishery regulations; 16 for use of illegal nets; 5 fishing without licenses; 1 fishing in prohibited area, St. Andrews locks; 13 possession in close season; 8 fishing in close season; 10 fishing in restricted area, lake Winnipegosis.

Fines collected, \$567.

Ninety-three confiscations, included in which are 182 gill-nets.

Proceeds of sales of confiscated articles, \$353.76.

Mr. Wm. A. Found, Director of Fisheries, visited the district early in September. One day of his stay was devoted to a meeting with all the fishery officers of the province, who had been called in for the purpose. The second day was entirely taken up with meeting fishermen and company representatives.

The meetings were most satisfactory and resulted in exchange of ideas and clarification of views.

#### REPORT OF INSPECTOR G. C. MACDONALD, PROVINCE OF SASKATCHEWAN, FOR 1925

During the year 1925 there has been a total commercial production of fish from the province of Saskatchewan of 61,971 cwts. This is an increase over the previous year of 1,286 cwts. There has been an increase of 2,585 cwts. of whitefish, 307 cwts. of trout, and a decrease of 660 cwts. of pickerel and 1,140 cwts. of pike, with small changes in the coarser species. The increase of whitefish is made up by 254 cwts. on Jackfish lake, 2,381 cwts. on Ile a la Crosse lake, 319 cwts. on Dore lake, 1,026 cwts. on lac la Ronge, 160 cwts. on Green lake, and 667 cwts. on Peter Pond lake. Decreases in whitefish are shown on Pierce lake of 447 cwts., Makwa lake 128 cwts., Turtle lake 629 cwts., Waterhen lake 529 cwts., Okemasis lake 282 cwts., Cream lake 134 cwts., and Lowes lake 289 cwts. The catch of trout increased on Ile a la Crosse lake 32 cwts., La Plonge lake 127 cwts., lac la Ronge 358 cwts., and decreased 181 cwts. on Pierce lake and 59 cwts. on Cream lake. The decrease in the production of pickerel and pike is reported due to the early freeze-up of lakes in November which allowed the fishermen to operate in deeper water at the opening of the winter fishing season.

## WINTER SEASON

During the winter commercial fishing season the production was 57,587 cwts., with a market value of \$438,668. This is an increase of 2,126 cwts. of fish, with an increase of market value of \$2,618 over the previous season. The production of whitefish increased 3,454 cwts. and trout 347 cwts. This increase is largely on Ile a la Crosse lake, Peter Pond lake and lac la Ronge. There is a decrease of 656 cwts. of pickerel and 1,183 cwts. of pike.

## SUMMER SEASON

During the summer commercial fishing season the production was 4,384 cwts. of fish with a market value of \$40,977. This is a decrease from the previous year of 840 cwts. with a decreased market value of \$5,465.

## MARKETS

The markets during the winter season might be considered as being favourable. Only a small amount of fish were stored during the spring and have since been moved. The December market was fairly good and a higher price is being obtained for trout. Most fishermen are grading their catch of whitefish according to size which is found to be profitable to them. During the summer season the market opened favourably but dropped considerably during the early part of June when most of the fishermen ceased operations, but again resumed them later in the season when the markets improved. A considerable amount of green fish were shipped during the winter season which commanded a higher price than the frozen fish.

## EQUIPMENT

The total value of all equipment used for commercial purposes during the year was \$82,727, being a decrease of \$6,874 from 1924. There has been a decrease of 182 gill-nets, 33 hoop-nets and 7 gasoline boats. The decrease in gill-nets is largely accounted for on Lowes and Turtle lakes, where fewer men operated. The decrease in hoop-nets is due to less fishing on the Saskatchewan rivers, and the decrease of 7 gasoline boats was on Lowes lake where fewer fishermen operated during the summer.

## CONDITION OF FISHERIES

Considerable summer commercial fishing has been carried on in Lowes, Turtle, Jackfish and Okemasis lakes. The summer limit of 200,000 pounds on Lowes lake was reached on July 4 and the limit of 100,000 pounds on Turtle lake was not reached. The catch on Jackfish lake was about average. Summer operations were not carried on as extensively on Okemasis lake as in the previous year.

The winter limit of 100,000 pounds on Lowes lake was not reached owing to the short catch of whitefish and a portion of the lake considered good whitefish ground being included in the restricted area. On Turtle lake where the winter limit is 125,000 pounds, all commercial fishing ceased on January 31 when the limit was reached.

The catch during the winter on Jackfish lake was about average and on Okemasis lake it was not quite as good as in the previous season.

Dore lake, which has been extensively fished for a number of years, is beginning to drop slightly in the production, although the quality of the whitefish has improved considerably.

The production on Ile a la Crosse lake is some above the average and practically half the catch of whitefish would average over four pounds.

On lac la Ronge the catch has been about average. The whitefish are small and would average 65 fish to the hundred pounds. The percentage of trout taken has increased considerably.

It is expected that new waters, such as Snake and Sucker lakes will be opened up in the near future. At the present time one of the fish companies is cutting a trail to Snake lake from the Big river side.

#### DOMESTIC FISHING

A total catch of 15,583 cwts. of fish was taken during the year under domestic license. This is an increase of 942 cwts. over the previous year. There has been an increase of 1,895 cwts. of whitefish, 56 cwts. of tullibee, 53 cwts. of pickerel, and 6 cwts. of trout, with a decrease of 2,142 cwts. of pike and slight changes in the other species. During the year 960 domestic licenses were issued, an increase of 28 over the previous year. The total catch per license has been 1,604 pounds compared with 1,571 pounds during 1924.

#### ANGLING

There is an estimated total of fish taken by anglers during the year of 24,328 cwts. This is an increase of 1,280 cwts. over the previous year. Of this increase pickerel show 276 cwts., pike 853 cwts., goldeyes 14 cwts., perch 50 cwts., and mixed fish 87 cwts. The average catch per angler has been 62 pounds of fish as compared with 63 pounds the previous year. The estimated number of anglers is shown at 39,682. This is an increase of 2,892 over 1924. During the season 493 special angling permits were issued to non-residents of the province. This is an increase of 117 over 1924.

#### REGULATIONS

During the year there were 90 prosecutions and a conviction secured in all cases resulting in fines amounting to \$396.50 being imposed, with additional court costs to the defendants of \$248.45, as follows:—

Fishing during close season.....	45
Fishing with illegal apparatus.....	31
Fishing without a license.....	11
Illegal possession of fish.....	3
	<hr/>
	90

There were also 84 confiscations made during the year, as follows, <sup>312</sup>—

Legal apparatus.....	33
Illegal apparatus.....	29
Illegally caught fish.....	22
	<hr/>
	84

There were 52 sales of confiscated articles made amounting to \$260.60.

#### FISHWAYS AND DAMS

There has been a new fishway constructed in Pasqua dam to replace the one washed out by the spring freshets. Minor repairs have been made on the fishway and dam on the Turtle river near Dulwich. The dam at the north end of Cowan lake has been taken over by the Department of Public Works and considerable improvements have been carried on by them. A new fishway has been constructed in the Canadian Pacific Railway dam south of Melfort. All dams and fishways in the province are now reported to be in serviceable condition.



REPORT OF INSPECTOR R. T. RODD, PROVINCE OF ALBERTA,  
FOR 1925

## INCREASES

In the commercial fishing for 1925 there is an increase in the total fish shipped of 1,059,900 pounds of fish with a value over that of 1924 of \$119,397. This is due chiefly to the summer coarse fish fishing increase at Lesser Slave lake, and also to the resumption of operations at lac la Biche. Although the limit of production of 1,500,000 pounds at Lesser Slave was reduced to that of 650,000 pounds and the seasons changed, it will be noticed that the enormous increase in coarse fish practically amounts to 500,000 pounds which more than covers the decrease in the whitefish. The fishing was excellent for pike and pickerel at Lesser Slave but poor for whitefish. At lac la Biche where the limit was reduced to that of 300,000 pounds the fishing for whitefish was extremely good, the catch for coarse fish formerly preponderant in this lake being light. The district around lac la Biche also produced heavily in whitefish as well as the coarser varieties. A large increase will be found from lac Ste. Anne, a lake that has been heavily fished in the early years of the province because of its accessibility, and I am glad to report the comeback of this lake. Other lakes such as Wabamun, Sturgeon, Moose and the small lakes around this district gave a steady production. The winter operations show an increase from Winnifred lake, where fishing was resumed after some three years rest, and where the production during the first three weeks was over 150,000 pounds of whitefish, the entire catch being shipped in a fresh state. Pigeon lake, which, in spite of heavy fishing for many years past because of its proximity to the thickly settled districts between Edmonton and Calgary, still continues to produce heavily.

## DECREASES

I beg to report that the production of fish from Cold and Primrose lakes shows a decrease in the catch of whitefish. This was caused mainly by the limit of production being placed on the lakes. The catches on these lakes are, however, reaching the limits imposed long before the end of the season, and I am convinced that they will never be depleted so long as the present limit is observed. A slight decrease in trout from Peerless lake was more than balanced by an increase in whitefish. Other lakes in the Lesser Slave district were steady in production of whitefish. Summer fishing for trout commercially at Cold lake is to be discontinued by authority of the department, owing to the increase in the amount of angling now carried on.

## MARKETS

The market for fish was decidedly better during the past year, and good prices prevailed both for fishermen and operators. Particularly was this to be noticed in the market for coarse fish. There is now a good demand for filleted jackfish and the refrigerator plant at Faust ran to capacity. The production of fresh fish, however, which has increased greatly, being produced at a large number of lakes, several car loads even being brought in from Peter Pond lake a distance of about 80 miles has affected the market for frozen whitefish somewhat. Several new companies have been formed on a co-operative basis by the fishermen themselves and one operating at Winnifred lake got good results. Retailers in the larger cities report a good year. There is a very healthy and optimistic outlook for the present year all around.

## TRANSPORTATION

Assistance from express companies has been good and no trouble received in obtaining all the cars needed. The companies are keen for the business, although the rates are discriminating from an Alberta viewpoint. Trails and roads were cut into Winnifred lake at some considerable expense, and the trail to Peter Pond lake further improved. Some trouble prevailed at this point during the winter season January-February with considerable loss of fish, owing to the complete thawing of snow by Chinook weather.

## EQUIPMENT

There has been a decided improvement in the equipment used, in spite of the heavy loss caused at Lesser Slave and lac la Biche through unusually heavy mid-summer storms. The latter interfered seriously with the fishing at Lesser Slave lake. A new smoke house has been started at Edmonton and is doing particularly well, at this plant small whitefish are smoked, and also smoked fillets of jackfish, the latter being a particularly well finished article. This plant, together with the refrigerator plant at Faust will handle any surplus of coarse fish that may be caught and can now be profitably marketed. Further developments on these lines may be expected during the coming year. New cabins are being built for summer operations at lake Athabasca and it is expected that refrigerator barges and re-icing plants will be built this spring. Several new gasoline launches and boats were used for the anglers at Cold lake and new hotels were also built at this resort. New cabins for the fresh fish business costing around \$2,000 have been built for the Peter Pond district, as also many new ice-houses. The Government has built a large wharf costing around \$15,000 to \$20,000 at lac la Biche for the grain trade. This will, however, also be used by the fishermen of this lake and will be a decided improvement.

## OBSERVATIONS OF THE REGULATIONS

The number of prosecutions from the 1st of April was 39, an increase of 16, and the confiscations numbered 27, an increase of 7. A great deal of assistance was given by the various Fish and Game Protective Associations particularly from the Northern Alberta Fish and Game Protective Association. The number of honorary guardians number 57, some of whom gave valued assistance during 1925. Below is detailed the offences against the Fisheries Act:—

1	prosecution under section	7	(excess of nets).
1	"	17	(illegal mesh).
2	"	24	(c) (fishing in prohibited water).
6	"	1	(fishing without license).
3	"	32	(fishing without permit).
15	"	20	(a and b) (fishing in close season).
7	"	29	(Fisheries Act) illegal possession of fish.
1	"	83	(Fisheries Act) assisting those fishing in close season.
2	"	77	(Fisheries Act) fishing in closed waters.
1	"	75	(Fisheries Act) pollution of water.
—			
39			
—			

## IRRIGATION SYSTEMS

During the summer considerable investigations were carried on regarding the destruction of fish in the Lethbridge Northern Irrigation System with a final and thorough investigation when the water was being shut off in October. The loss of fish in this system is very small, while there is every possibility of excellent coarse fish fishing being developed in the Keho reservoir, in a few years, through being stocked by fish passing through the main canal from the



Old Man river. In the Chin reservoirs on the Southern Alberta Irrigation System, Lake Newell in the Brooks district, Chestermere lake in the Calgary district, all in Canadian Pacific Irrigation Systems, and lake McGregor on the Canada Land Irrigation System, good angling is now the rule.

#### DAMS AND FISHWAYS

A new dam and fishway was built by the Canadian National Railway on the Blindman river at Burbank to replace that constructed the year previous, and which was carried away by the ice and high water in the spring. The National Railway has also under construction a fishway in their dam at Waskatenau on Waskatenau creek. The Canadian Pacific have just completed a large dam in the Pipestone creek, near Wetaskiwin, and have installed, at considerable expense, a fishway 36 feet long, with a return section, which brings the lower end or opening back to the foot of the dam. This fishway is strongly constructed and built to scale and should function properly. All other dams and fishways previously reported are in good repair.

#### EXAMINATION OF LAKES AND STREAMS AND STOCKING THEREOF

Nine lakes in the Edmonton district were examined during the season. Six were found suitable for stocking. Four lakes in the district west of Edmonton were stocked by transfer, with perch and pickerel. During September, streams in Buffalo, Prairie, Jasper park and Obed lakes, west of Edson, were stocked with Rainbow trout fry. Some assistance was given the Superintendent of the Banff hatchery in the stocking of the streams tributary to the Red Deer river. The stocking of streams in the southern part of the province was handled entirely by the hatchery superintendent with some assistance from the overseer of that district.

#### ANGLING

Excellent catches of lake trout were obtained at Cold lake during the summer, 22,437 pounds of trout being taken by 280 anglers, the largest trout taken weighing 53½ pounds. The angling in the Athabasca and its tributaries was poor, very few good catches being reported. Numerous reports have been received of the excellent fishing for rainbow trout that was obtained in these streams before and during the construction of the Canadian Northern and Grand Trunk lines. The general opinion is that all methods of fishing were resorted to during the construction of these lines, nets and dynamite being used largely, with the above result. It was also reported that fishing was not good in the Jasper park waters, the fish being plentiful in Pyramid lake only, but difficult to catch. These waters require intensive restocking if good fishing is to be expected. Very little angling was carried on in the Red Deer, although a few good catches were reported. Angling in the Bow river and streams south to the International boundary was generally very good, and especially so in the Highwood river, Willow creek and the Bow river at certain points. Good catches of large rainbow trout were taken from the Bow river thirty miles east of Calgary. Reports have been received from expert anglers stating that the fishing was never so good or such good sport obtained before as was the case in the Highwood river last season, and it has also been reported that the fishing in Willow creek was better than it has been for twenty years. At least 25 per cent of the catch in the Highwood river was rainbow trout placed there from the Banff hatchery, introduced for the first time into this stream in 1919. Previous to this the only trout indigenous to this stream was the native cutthroat trout. Fishing in some of the streams tributary to the Old man river was excellent, while in others only fair, the result of over-fishing during the previous year. Angling for pike in the



irrigation reservoirs continued good. Fishing for grayling was reported by the overseer to be the best ever known in and around Calgary. A small amount of goldeyes were reported caught in the Bow river below the C.P.R. irrigation dam at Bassano. Great scarcity of this species was reported from the Red Deer, where in former years good catches were always obtained. Good catches were reported in the lakes around Edmonton from an angling point of view in perch, pickerel, and pike.

REPORT OF CHIEF INSPECTOR MAJOR J. A. MOTHERWELL,  
WESTERN FISHERIES DIVISION (BRITISH COLUMBIA),  
FOR 1925

It is with much pleasure that I report another excellent year in the fishing industry of British Columbia. Generally speaking, market conditions have been better and both the fishermen and the owners of the packing establishments have had a prosperous year.

SALMON

On reference to statement No. 1, it will be found that only in the year 1924 has the pack of salmon exceeded that of 1925, and only then by 26,883 cases.

The pack of sockeye exceeded that of 1924 by 23,042 cases, and is the largest pack of this variety since 1915. In view of the small quantity packed in 1921, considerable apprehension was felt as to this year's prospects. The satisfactory figures are largely the result of the extraordinarily good run to Rivers and Smiths inlets, 201,186 cases being taken from these two areas. This is by far the largest pack on record. The next biggest run was in 1915, when a total of 162,651 cases was packed. In practically every area, apart from the Naas river and the Fraser, there was an increased run of sockeye, and in spite of the large pack the spawning areas were found to be well seeded.

At the Naas river the total pack of 20,351 cases of sockeye is a fairly satisfactory one in view of the fact that the brood years of 1920 and 1921 were so poor. The runs to the Naas river, however, are obliged to run the gauntlet of the numerous traps and seines in Alaskan waters, and it is difficult to intelligently understand the significance of the pack figure.

On the Skeena river it was not expected that the pack would be large in 1925 owing to the small runs in the main brood years of 1920 and 1921. The showing, however, is a satisfactory one in view of the conditions.

The run to the Fraser produced only 31,523 cases on the Canadian side and 106,064 in Puget sound. These figures are very similar to those of the brood year of 1921. The quality, particularly of the Fraser sockeye this year, was unusually good.

The pack of cohoes in the whole province shows a very considerable increase since 1920, but as in the case of pinks and chums, the intensity with which this variety has been fished has depended altogether on the market conditions. In 1925 the demand for cohoes was unusually good, largely due to the favourable terms of the treaty with Australia, which gives Canadian salmon approximately \$1.50 preference over that of other countries.

This being an off year for pinks in the Queen Charlotte islands, the total for that district is fairly small. On the Fraser it was the big pink year and there was an excellent run. Owing to the fact, however, that the pink run passes through the waters of Puget sound before reaching the Fraser river the Canadian fishermen have to be satisfied with what the American fishermen leave. By the statement enclosed it will be observed that although the Puget sound can-

neries packed 555,848 cases of pinks the Fraser river canneries only received 99,800 cases although the very large percentage of the pinks coming into Puget sound waters are on their way to Canadian streams.

The chum pack was a record one with a total of 607,904 cases. In addition there was a sufficient number of chum salmon dry salted to make 229,111 cases more. It is felt to be very doubtful if the supply of salmon can stand such an annual strain.

With the considerable increase in the amount of fishing gear in the water, particularly purse-seines, which have increased by 87, the pack shows that there was not nearly as good a supply of fish available as during the previous year. It is felt that in order to maintain the supply of all the varieties of salmon, we must, in view of the more intensive fishing, take some measures which will conserve our salmon for posterity. There is a pack limit which it is unsafe to exceed, and if the fishing operations are to increase in intensity as they have in the past two or three years there must be no hesitation in placing in force such restrictive measures as will adequately take care of conservation. There would appear to be little prospect, under present conditions, of depleting the sockeye runs. The situation in the case of the pinks and chums is a very different and difficult one. The industry must expect that very drastic measures will be taken if found necessary to take care of the situation.

#### HALIBUT

This was the second year of the period covered by the International Halibut Treaty and there was again enforced a close season of three months, from November 15 to February 15. As will be seen by perusal of statement No. 7, there was a falling-off in the quantity landed in British Columbia ports of 13,142 cwts. In addition to the closed period there were other factors which resulted in a short catch in spite of the increased amount of fishing equipment used. The prices obtained were not as attractive as those during the previous year, due to several reasons. One undoubtedly was the fact that during 1924 the cold storage plants had laid in large stocks of the frozen variety, expecting to unload during the closed season. These plans, however, did not work out, and the result was that when the season opened again on February 15 there was a large quantity of frozen halibut still held and which prevented the expected demand for all the fresh variety that was brought to port. As the closed period was expiring all the fishing equipment went to the banks at practically the same time and the result was that unusually large quantities were offered for sale and which the market was not in a position to absorb. On February 26 fifteen American and four Canadian boats arrived at Prince Rupert with approximately 493,000 pounds of fresh fish. Due to the quantity which had already been purchased since the opening of the season, the highest price offered at Prince Rupert was 7 cents, which the fishermen on that day refused to accept. Six of the American boats immediately left for Seattle, hoping to obtain better prices. It is interesting to note that the decrease in the quantity of fresh halibut landed at Canadian ports during the year was accounted for entirely by the operations of Canadian vessels, the quantity landed by Americans being larger than the previous season. Undoubtedly this condition is due largely to the closed season during the winter months. Previous to the Halibut Treaty the Canadian boats during the winter, due to weather conditions, could only fish in the waters near the Canadian ports. The operation of the treaty regulations prevents this winter fishing by Canadians.

In August the United States Tariff Commission held a hearing at Seattle for the purpose of discussing the report prepared by its experts who had been working during the previous year in the collection of statistics of all kinds as affecting the halibut industry in relation to the American tariff. An opportunity was given all interested to express themselves in order that the recommendation



which the Tariff Commission was making to the President of the United States looking to a possible reduction or increase in the 2 cents per pound duty, would only be made after the fullest opportunity had been given everyone concerned to place facts before the commission. At this date it is not publicly known what the recommendation to the President was, but any action resulting therefrom will be looked forward to with very great interest by Canadian halibut operators particularly.

A development of some interest during the year was the shipment by a Japanese firm of Kobe, Japan, of 860,000 pounds frozen halibut consigned to Vancouver per the ss. *Haruna Maru*, which arrived at its destination during the latter part of August. This consignment was frozen by the brine freezing method, but it appears that the fish were not properly glazed or properly handled while in storage before reaching the Canadian side. As a result their exterior presented an appearance which operated against their profitable sale. The prices obtained for this shipment, which was on consignment, would appear to have been not sufficiently attractive to justify further attempts, although nothing is known of the future intentions of the consignors.

#### HERRING

By statement No. 8 it will be observed that the year's pack of dry salted herring was the largest on record, although the fall run to the Barclay sound area on the west coast of Vancouver island was a very poor one. In fact for four weeks there were hardly any herring at all caught. The run on the east coast, however, more than offset this scarcity.

The dry salting branch of the fishing industry, owing to the department's policy of eliminating the Oriental, will shortly be practically entirely in the hands of Canadian whites and Indians.

#### PILCHARDS

The pack was 37,182 cases, compared with 14,898 the preceding year. In addition, owing to the fact that pilchards were for the first time permitted to be processed in reduction plants, 495,653 gallons of oil and 2,083 tons of meal were produced on the west coast of Vancouver island. These operations were more or less of an experimental nature and it is felt that the results obtained have been sufficiently encouraging to warrant a considerable expansion in the reduction works industry.

#### WHALING

Whaling operations again during the year showed a falling-off, with a total catch of 351, as against 415 the preceding year. The station at Rose harbour, situated at the south end of Queen Charlotte islands, obtained the most satisfactory results, with 176 whales. In this connection it is interesting to note that the whaling companies in Alaska had a most successful season.

#### FUR SEALS

There were 4,465 fur seal skins taken by the Indians operating as usual in canoes and with spears. The previous season only 2,232 were obtained. The price averaged \$10 per skin.

#### DESTRUCTION OF SEA LIONS

The sea lion hunting expedition met with even better success than the preceding season and accounted for 1,658 adults and 1,169 pups, a total of 2,827. This is the largest bag so far obtained. Operations were conducted on the



Virgin islands and Pearl rocks opposite the Rivers and Smiths inlets. An interesting feature observed was the paucity of yearling lions, not more than 50 being observed on both the Virgins and Pearls, which would appear to show conclusively the results of the preceding year's killings.

The gratitude of the gill-net fishermen was again demonstrated by the liberal presents of cigars to the crews employed in the destruction of sea lions and demonstrates the attitude of the fishermen who stated that it was now observed outside of Rivers inlet that the sockeye schools are not broken up as heretofore but run steadily to the inlet. The largest catches of sockeye were made during the worst two weeks of bad weather the preceding year, which was quite unusual.

It is hoped that facilities will shortly be available which will permit the extending of the sea lion operations to include other points where they gather in large numbers on the rookeries and where they could be fairly easily killed.

#### PATROL SERVICE

In the protection of the fisheries during the year, a total of 91 boats was used, 26 of these being the property of the department and 65 being chartered. In addition there were three seaplanes stationed at Prince Rupert and a fourth one was available at the Seaplane Station in Vancouver on call. During the year the C.G.S. *Malaspina* logged 19,956 miles, and the *Givenchy* 15,164 miles. With the fishing operations becoming more intense each year the work of the patrol boats continues to increase and it is imperative that the two large steamers particularly be kept constantly on patrol. Their work is seriously interfered with by lifesaving duties and calls from other departments.

The flying boats consumed 296 hours 40 minutes as against 152 hours 8 minutes, the previous year. It is felt that without the aid of the Air Service the protection of our salmon would be a matter of very grave concern indeed. Even under the best of conditions it is not possible to provide a 100 per cent efficient service. Without the planes the number of boats chartered would require to be increased and the service obtained from them would not give the same results as are produced by the flying force.

#### REGULATIONS

The sum of \$3,164.20 was realized from fines and sales during the year as a result of 138 prosecutions. With the increased demand for British Columbia salmon there is a greater incentive to disregard fishing boundaries and closed periods. This naturally results in a greater number of prosecutions, which is regrettable as it is far more desirable to prevent violations than penalize operators for breaches of the regulations.

The number of salmon purse-seines issued has increased from 92 in 1912 to 329 in 1925 but on the other hand I am glad to be able to report that in the same period the number of salmon drag-seines has been reduced from 193 to 37.

#### REDUCTION IN ORIENTALS

The department's policy of eliminating the Oriental from the fisheries of the province with a view to placing the entire industry in the hands of white British subjects and Canadian Indians appears to be working out well as is shown by statement No. 10, which covers a very large proportion of the total number of licenses issued which Orientals were permitted to hold. In the salmon gill-net operations the Orientals during the year 1925 held only 24 per cent and in the salmon trolling 10.5 per cent of the total number issued in the province.

In the herring dry salting operations a further reduction of 25 per cent was made during the year, making a total of 50 per cent, and in the case of salmon

dry salting a first reduction of 25 per cent went into effect and it is the intention to continue this percentage each year until these industries are entirely in the hands of Whites or Canadian Indians.

#### SCIENTIFIC INVESTIGATION

In March a meeting was called in Seattle of executive officers of the Fishery Departments of the Dominion of Canada, the province of British Columbia, Alaska, and the states of Washington, Oregon and California, with a view to the co-ordinating of the work being conducted separately looking to an improvement in the present fish cultural operations and the obtaining of information which would result in a better understanding of the salmon fishery conditions as affecting the whole Pacific coast of the continent. An association was formed known as the International Pacific Salmon Investigation Federation. One of the outstanding results of this conference was the tagging operations in connection with the runs of spring, coho and sockeye salmon, which provided some extremely interesting information with regard to the destination of the several varieties passing a number of points. The tagging operations should be extended to cover all varieties of salmon during all stages of the runs and in as many localities as is possible and with the information obtained therefrom conservation measures could be much more intelligently arranged. A more detailed report will be forthcoming from the Biological Board and will be found elsewhere in this publication.

#### POWER BOATS IN SALMON GILL-NET FISHING, DISTRICT NO. 2

Although since the year 1923 power boats have been permitted in District No. 2 in salmon gill-net operations, it is interesting to note that out of a total of 2,866 licenses, only 242 were fished by means of power boats, as is shown by statement No. 11.

#### REMOVAL OF OBSTRUCTIONS IN SALMON STREAMS

During the year the sum of \$4,210.49 was spent in the above work but this of course does not represent the quantity of work performed by the engineering staff. A detailed report of Senior Engineer J. McHugh appears elsewhere in this report and will be found to be of considerable interest.

#### WAREHOUSE AND MARINE WAYS, FRASER RIVER

The construction of the accommodation at Poplar island, Fraser river, for the purpose of storing fisheries equipment and stores and repairing the patrol boats, was completed during the year and has proved most efficient and economical. In addition to the annual overhaul of the boats of the Fraser river and Vancouver district all but one of those used in District No. 3 are brought down each year to Poplar island and the saving to the department has been very considerable and well justifies the expense of providing the accommodation. While the ways and machine shop were not completed in sufficient time to take care of our boats for the annual overhaul in the spring of 1925, the estimates of the cost of the repairs to be undertaken in the spring of 1926 will show a saving of approximately \$2,262.

#### CONDITIONS ON SPAWNING GROUNDS

*Queen Charlotte Islands.*—Generally speaking this is not a sockeye district although there is a small run each year to the Naden and Yakoun rivers. It is only in the even numbered years that the large run of pinks occurs and in the odd numbered years the operators depend practically altogether on the



supply of chums although on the east coast there is a fair quantity of pinks, even for an off year. The department has spent considerable money during the past few years in clearing the Yakoun river of obstructions and the result has been that now all salmon can easily ascend. The spawning grounds generally, apart from some of the east coast streams, show a satisfactory quantity of spawning chums.

*Naas River.*—In this area was found the largest number of spawning sockeye that has been observed for years and conditions at the fishway at Mezia-den lake were found to be eminently satisfactory. The salmon have no difficulty whatever in passing up and at the time of inspection this structure was found to be full of fish on their way to the upper reaches. The run of spring salmon was also a very satisfactory one and the cohoes were found to be ascending in considerable quantities.

*Skeena River.*—There has always been a run of sockeye to the Exstahl river but owing to the character of the country, which makes the inspection trip of a very hazardous nature it was not until this year that an inspection was made. It would seem that this area is not as important a one from the standpoint of sockeye salmon as the Lakelse or Babine districts but quite a fair supply of this variety of spawning fish was observed. Conditions on the spawning beds would seem to justify the impression that the Exstahl district is an important one from the standpoint of the spring salmon.

In the Lakelse area a splendid run of sockeye was found and all the spawning streams were well seeded in addition to over eleven million eggs being taken at the hatchery.

In the streams entering into the Babine lake, which area is the most important one with relation to the Skeena river, a most satisfactory supply of sockeye salmon was found and the inspecting officer estimates that conditions were 20 per cent better than in the previous season. Pinks were also very numerous in this area and the beds usually resorted to by this variety are well stocked.

*Central Division.*—On the whole there was a satisfactory run of sockeye to the streams in this division although the fishery officers were somewhat concerned on account of the dry season which resulted in the salmon in many places having difficulty in passing up the streams. However, an adequate proportion of the run seems to have succeeded and the conditions on the spawnings beds are reasonably good. Owing to the low water the fall varieties, particularly the pinks, were obstructed for some time and while not as many reached the spawning beds as could be desired at the same time it is felt that on the whole the seeding was fair.

*Bella Coola.*—The supply of sockeye on the spawning beds of the Bella Coola river was found to be the best for some years. The quantity of springs was only fair and a small supply of pinks and chums was observed. The number of cohoes was satisfactory. In the Kinsquit river the supply of sockeyes while not a heavy one was fairly good. The runs of springs, pinks and chums were light although an adequate showing of cohoes was observed. In Dean river while the spawning area at the present time is limited due to a fall there was quite a fair run of springs and cohoes noticed on the spawning beds. Speaking generally of the whole district, while the fishing was intensive, it is felt that a reasonable proportion of the runs of the several varieties succeeded in reaching the spawning areas.

*Rivers Inlet.*—The report received from the inspecting officer in this district is an unusually satisfying one and shows that large quantities of parent spawning sockeye salmon were present on practically all the spawning beds. In addition the hatchery was easily filled to capacity in a short period and the quantity of sockeye packed at the canneries operating was much the largest



in the history of the district. The hatchery operations together with the work done in the way of keeping the streams clear of obstructions has undoubtedly been of immense benefit to this river.

*Smiths Inlet.*—At this point, in spite of a pack of 33,764 cases of sockeye, there were great quantities found on the spawning grounds.

*Alert Bay.*—The principal sockeye stream in this area is the Nimpkish river. Notwithstanding the fact that there was more fishing equipment in the way of purse-seines and drag-seines operating at this point than ever before, the escapement of sockeye to the spawning grounds was such as to provide for a most excellent seeding. Only four days a week fishing was permitted from the first of the season and this fact no doubt is largely accountable for the good supply of salmon passing. There was also an excellent run of cohoes as well as spring salmon although that of pinks was light. A plentiful supply of chums also ascended the stream.

At Glendale cove, into which flows the second best sockeye stream in the district, the supply this season was one of the best for years. The runs of pinks and chums were also quite satisfactory. In such rivers as the Tsulquate, Nahwitti, and Wakeman the supply of pink salmon was very good. The quantities of pinks found on the spawning grounds over the balance of the district, however, was only fair. Generally speaking the supply of chums through the district was satisfactory. This cannot be also said of the cohoes with the exception of such points as Thompson sound, Qualate river, Howea sound, Call creek and Adams river.

*Quathiaski District.*—This is not a particularly good sockeye area and the supply at Hayden creek was only fair. The same applies to Phillips river. Apart from the chums no variety of salmon was very plentiful on the spawning grounds although there was a satisfactory quantity of cohoes at Salmon river, Phillips river and Homalko river. At Campbell river, which is well known for its excellent Tyee (spring) salmon sport fishing, there was an adequate supply of this variety.

*Comox.*—This is not a sockeye area and 1925 was an off-year for pinks. The supply of cohoes on the spawning grounds was found to be very light with the exception of Little river and French creek. This also applies largely to chums although there was a good run at Coal creek, Waterloo creek and Big Qualicum river.

*Pender Harbour.*—There was practically no sockeye in this area apart from Sauch-en-Auch creek. For some reason the quantity observed on the spawning grounds was very unsatisfactory although the fishway installed at this point is quite efficient. The run of pinks on the whole was fairly good. The streams in the Jarvis inlet area were particularly well seeded. A satisfactory portion of the cohoes and chum runs reached the spawning grounds.

*Nanaimo.*—This is not a pink area. The quantity of cohoes was only fair. In the case of the chums, apart from the Nanaimo river, the spawning areas were not found to be very well stocked.

*Cowichan.*—There are no sockeye in this sub-district. The spawning beds of the Cowichan, Koksilah, and in fact practically all the streams show a plentiful supply of cohoes salmon. Chums ran in considerable quantities to the Cowichan and Koksilah and the spawning areas were well seeded.

From a standpoint of sporting fish the seeding of the beds by the steelhead and the cutthroat trout has been quite good.

*Sooke.*—In the Sooke river and Muir creek a good run of cohoes was observed. The supply of chums generally was also most satisfactory although Demanuel creek showed fewer in proportion than other streams.

*Alberni.*—Apart from the Somass and Stamp rivers, the Anderson river, and a few in Nitinat, there are no sockeye in this area. The supply of this variety to the Anderson river was only fair although the usual take of eggs was effected at the Anderson Lake hatchery. The spawning grounds around the Somass lake were plentifully supplied and the run which reached as far up the Stamp river as the falls seem to be somewhat larger than usual. Owing, however, to the condition at the falls these salmon are practically all prevented from reaching a larger area. It is hoped that some means can be devised in the near future whereby a more extensive spawning district can be opened to this run. The supply of cohoes at Stamp river was excellent and owing to some assistance being given by means of reducing the falls practically all reached the good spawning area above. At the Sproat, San Juan, and Gordon rivers there was a plentiful supply of this variety also. The Alberni district is not a pink area. The run of chums, apart from the San Juan and Gordon rivers, was not particularly satisfactory.

The Nitinat area does not appear to have yet recovered from the extremely intensive fishing of some years ago.

*Clayoquot Sound.*—Sockeyes only run to the Kennedy and Medgin rivers. The spawning beds in the former district were very well seeded and there was also a satisfactory supply at the latter. With regard to cohoes, on the whole the supply was good, particularly at Hesquot river, North and East bay, Atleo river, Bauden bay, Trout river, Tronquile creek, and Deer creek. This is not a pink area. The chum run was quite good and the spawning grounds were practically all found to be abundantly seeded.

*Nootka Sound.*—This is not a sockeye or pink district. An inspection of the spawning beds did not show a satisfactory supply of cohoes, but on the whole the supply of chums was sufficient to provide a good return for future years. This applies particularly to such streams as Conuma river, Deserted creek, Sowand river, and Espinosa river.

*Kyuquot.*—There are no sockeye streams in this sub-district and there were few cohoes found on the spawning beds. This also applies to chums.

*Quatsino.*—Sockeye are few in this area and they are of the creek variety. A fair supply was observed at Marble river and a few at Mahatta river. Satisfactory conditions were found with regard to the supply of cohoes, generally speaking, and this applies also to the chums. There were few pinks to be found.

#### FRASER RIVER WATERSHED

In the Stuart Lake district the return of parent sockeye salmon this year has been the largest since 1909. The result of the intensive planting of eyed sockeye eggs on the natural spawning beds in this area could first be expected to appear during the run of 1925, and judging from the most satisfactory showing of returning fish there would appear to be every justification to feel that the fish cultural operations as being conducted at present are responsible for the satisfactory conditions as found this year on the spawning grounds. The superintendent of the hatchery at Stuart lake states that in several of the streams visited he observed as many as 500 or 600 spawning sockeye, although only a portion of each stream was inspected. The Indians took at least 1,200 sockeyes for their winter food purposes. While of course 500 or 600 fish would not go very far in seeding such a large area as the Stuart lake system, at the same time, when it is remembered that for years past there have been hardly any sockeye at all seen, this year's conditions are decidedly encouraging.

The Bowron Lake district showed practically no sockeye, the dozen or so observed being hardly worth mentioning. In the Quesnel district the local officer estimates that about 500 ascended the Upper Horsefly and McKinley rivers. A



thorough inspection was not made of the other Quesnel lake tributaries, therefore no information is available. The conditions are estimated to be very similar to those of four years ago.

The local officer reports that he found the sockeye run to the Chilco river the best since that of four years ago and he feels that it is slightly better than that of the previous cycle year.

In August Mr. C. W. Harrison, the Inspector of Hatcheries, made a thorough inspection of Chilco lake and its tributaries. The impression prevailed that this was one of the main spawning areas for the sockeye passing above Hells Gate. The inspecting officer, however, found that while there does exist a limited suitable spawning area, in his opinion Chilco lake has not been a very great factor in the large sockeye runs of previous years. It is possible, however, that Chilco river itself and Whitewater river and lake may have been used extensively by these salmon, and it is expected that a thorough examination of these waters will be made by Mr. Harrison during 1926.

In the Anderson-Seton lake area, for the first time in a considerable number of years, comparatively fair quantities of spawning sockeye salmon were observed. The few thousands observed of course are only a very small fraction of the runs which used to ascend this system, but it is sufficient to be encouraging. It has been suggested that these were fish which were on their way to the upper reaches of the Fraser river watershed but which on account of being held up, at least temporarily, at the canyon in the Fraser river just beyond the junction with Bridge river, have dropped back the five or six miles to the Seton lake system. This suggestion has been investigated as thoroughly as is possible and the writer feels that such a conclusion is not warranted.

For the preceding four years particular attention has been given to the upper reaches of the Anderson-Seton lake system from the Pemberton hatchery and considerable quantities of both eyed sockeye eggs and fry have been planted each year under the best of conditions. There would appear to be little doubt but that the returning fish this year are the result of fish cultural operations. This is borne out by the statement of Guardian Mr. T. E. Scott, who has had a considerable number of years' experience in the district. He states in part as follows:—

"In reference to Seton creek run of sockeye—knowing the difficulty at Bridge river and this being the first time that salmon of this species have appeared in any quantities for years, I reported on October 9, 1925, that it might be that salmon had drifted down and gone up Seton creek. My next visit sockeye had increased greatly, and in good condition, so of course this idea exploded. I followed the course of sockeye from Seton creek to Gates creek or Anderson creek, a distance of over thirty miles. It is out of the question to think for one minute that salmon, weak and battered, could drop back to the Fraser river eight miles and go over thirty more."

It is certainly not at all likely that fresh run fish would be appearing in the Seton system if they were headed for points above Bridge river canyon, but it is far more likely that any fish which had dropped back after fighting the canyon for some time would be considerably battered.

At the Bridge River canyon the Indians have been in the habit of taking their food supply from the salmon which are gathered in the safe resting places at the foot of the fast water. It is discouraging to find that after the best return of parent sockeye salmon in years to the upper reaches of the Fraser some 7,000 should have been taken by the Indians at this point. It will be appreciated that these fish when they have already reached a point so far up the Fraser river are of immense value from a standpoint of natural reproduction on the spawning grounds in the upper reaches of the watershed.

In the Shuswap-Eagle river district a better showing of sockeye salmon was observed than usual. At the Adams and Little rivers the local guardian estimated that he had seen approximately 20,000 spawning sockeye. There were very few observed in Eagle river.



A considerable improvement was observed in the run of salmon to the Thompson river watershed. This applies to the spring and sockeye varieties.

At Hells Gate the conditions were very similar to previous years, and although salmon were delayed at certain times for short periods they eventually were able to pass beyond this point.

To the Birkenhead river again this year there was a splendid run of sockeye. Forty million eggs were collected at the hatchery and large numbers of sockeye spawned naturally. There is no doubt but that the run to this stream is being well maintained. At Harrison lake no unusual number of fish was observed. A fair number spawned in Morris creek and in the rapids at Harrison river.

At Cultus lake a fair supply of sockeye passed up to the spawning beds and all were permitted to spawn naturally. The run, though satisfactory; was not as large as that of the preceding year.

At Pitt lake conditions continue to be excellent and the quantity of spawning parent sockeye ascending the upper streams is being well maintained.

In the Nicomekl and Serpentine rivers, which are two of the chief sport fishing streams in the vicinity of Vancouver, the supply of fish was found to be very satisfactory and with the present conservation measures there would appear to be no doubt but that good fishing will continue indefinitely.

In the Howe sound and Burrard inlet area the principal commercial streams such as Indian river and the Squamish river received an excellent seeding by pink salmon, this, of course, being the big year. A certain amount of difficulty was experienced for a time owing to an unusually dry season. The supply of chums to these streams was only fair.

In the Capilano, Lynn and Seymour creeks, in spite of the intensive fishing by anglers, the supply of the several varieties, and particularly the steelhead, keeps up in a most satisfactory way. It is remarkable that such excellent fishing can be obtained practically in the city of Vancouver.

The year 1925 was the year of the big pink run to the Fraser river district. The run this year was excellent and all the pink spawning areas were well seeded. Unfortunately the Canadian fishermen obtain a very small proportion of this run owing to the intensive fishing to the south of the international boundary by means of purse-seines and traps. Gill-nets only are permitted on the Canadian side and by the time the fish have run the gauntlet of the Puget sound fishermen few are left for Canadian operators, although the spawning grounds are on the Canadian side.

#### GENERAL

The season 1925 was a most difficult one owing to the lack of rain. The season was the driest for many years and this resulted in there being not sufficient water in the streams for the salmon to pass up to the spawning areas in many cases. In such instances every effort was made by means of increased closed periods, extension of the prohibited areas, and early final closing to the end that a proper proportion of the runs would be enabled to spawn in the usual areas. There have been instances during the year, however, when pinks and chums deposited their eggs close to the salt chuck and it is a question as to whether such spawning will be productive of good results.



1905.....	67	"	"	"	1,080,673	(28,359 Red & Wh. Sprines)	.....	.....	44,458	13,970.....	1,167,460
1906.....	64	"	"	"	459,679	31,261	1,083	.....	69,132	(68,305 Pks. & Ch.)	629,460
1907.....	58	"	"	"	314,074	23,159	2,939	.....	87,900	(118,704 Pks. & Ch.)	547,459
1908.....	52	"	"	"	355,023	25,433	2,731	.....	81,917	(76,448 Pks. & Ch.)	542,689
1909.....	72	"	"	"	840,441	18,218	799	.....	61,918	(40,544 Pks. & Ch.)	967,920
1910.....	58	"	"	"	565,915	19,313	9,476	.....	74,382	34,613	58,362
1911.....	59	"	"	"	383,509	38,751	9,705	.....	119,802	305,247	91,951
1912.....	57	3,640	.....	92	444,762	62,345	18,092	.....	165,309	247,743	58,325
1913.....	78	4,782	.....	74	972,178	37,433	3,616	.....	69,822	192,887	77,965
1914.....	63	4,857	.....	61	536,696	32,908	16,420	.....	120,201	220,340	184,474
1915.....	63	4,951	.....	61	476,042	51,734	6,370	.....	146,956	367,352	82,000
1916.....	72	4,600	.....	80	214,789	51,231	15,495	.....	183,623	280,644	240,201
1917.....	94	5,286	1,370	99	339,848	48,630	27,646	(11,740 BB. & SH.)	157,589	496,759	475,273
1918.....	88	5,073	1,786	122	276,459	65,535	41,819 Pk. & Wh.)	(15,916 BB. & SH.)	191,068	527,745	497,615
1919.....	82	4,598	2,260	139	369,445	73,179	9,077	.....	175,670	346,639	372,035
1920.....	65	4,761	1,855	155	351,405	95,983	8,441	.....	101,972	520,856	84,626
1921.....	56	4,777	1,452	59	163,914	36,725	6,061	.....	117,288	192,906	71,408
1922.....	64	4,491	1,513	143	299,614	21,163	6,520	.....	102,845	581,979	258,204
1923.....	61	3,957	1,446	223	334,647	17,539	4,858	.....	112,044	440,932	418,055
1924.....	62	3,696	1,553	242	369,601	18,741	2,591	.....	115,944	657,561	570,497
1925.....	65	4,225	1,821	329	392,643	39,142	4,419	.....	188,505	445,400	607,904
							29,938	10,675			1,720,622

NOTE.—Licenses issued 1923, 1924 and 1925 include transfers from one district to another.





1905.....	3	.....	.....	.....	(3,340 Red and Wh. Spr.)	.....	.....	3,085	1,840	.....	32,725
1906.....	3	.....	.....	.....	.....	63	.....	5,997	(3,450 Pk. and Ch.)	.....	32,534
1907.....	3	.....	.....	.....	.....	.....	681	6,093	(5,957 Pk. and Ch.)	.....	31,832
1908.....	3	.....	.....	.....	.....	.....	1,101	8,348	(6,612 Pk. and Ch.)	.....	46,908
1909.....	3	.....	.....	.....	.....	.....	.....	6,818	(3,589 Pk. and Ch.)	.....	40,990
1910.....	4	240	.....	.....	.....	11	.....	6,285	895	351	39,720
1911.....	3	240	.....	.....	.....	325	.....	7,842	11,467	5,189	65,084
1912.....	3	265	.....	.....	.....	1,226	.....	12,468	12,476	3,245	71,162
1913.....	3	265	.....	.....	.....	152	.....	3,172	20,539	2,987	53,423
1914.....	4	265	.....	.....	.....	725	.....	9,276	25,333	25,569	94,890
1915.....	4	265	.....	.....	.....	648	.....	15,171	34,879	11,076	104,289
1916.....	4	265	.....	.....	.....	784	.....	19,139	59,593	11,200	126,086
1917.....	4	265	.....	.....	.....	1,326	.....	22,180	44,568	24,938	119,495
1918.....	6	265	.....	.....	.....	1,003	.....	17,060	59,206	40,368	143,908
1919.....	5	300	.....	.....	.....	581	.....	10,900	29,949	24,041	97,512
1920.....	5	342	.....	.....	.....	789	.....	3,700	43,151	12,145	81,153
1921.....	5	338	.....	.....	.....	220	.....	8,236	29,488	2,176	51,765
1922.....	5	304	.....	.....	.....	255	42	3,533	75,687	11,277	124,071
1923.....	5	244	.....	.....	.....	335	.....	7,894	44,165	25,791	99,580
1924.....	4	210	.....	.....	.....	375	.....	6,362	72,496	26,612	142,939
*1925.....	3	210	.....	.....	.....	538	.....	8,188	35,880	23,497	94,752
†1925.....	.....	.....	.....	.....	.....	392	.....	7,726	34,530	22,504	89,008

NOTE re 1925 figures:—\*Pack of fish caught at Naas River regardless where canned.

†Pack at Naas River regardless where caught.

## PACK OF CANNED SALMON ON THE SKEENA RIVER—1876 TO 1925

STATEMENT No 3

Year	Num- ber of can- neries oper- ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue- backs	Steel- heads	Cohoos	Pinks	Chums	Total
		G.N. Troll.	P.S.	D.S.	T.N.										
1876.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1877.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000
1878.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	8,500
1879.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	10,603
1880.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	19,694
1881.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	21,560
1882.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	24,522
1883.....	5	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	31,157
1884.....	5	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	53,986
1885.....	2	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	12,900
1886.....	3	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	37,587
1887.....	5	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	58,592
1888.....	5	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	70,106
1889.....	6	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	58,165
1890.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	90,509
1891.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	78,135
1892.....	8	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	90,280
1893.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	59,675
1894.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	61,151
1895.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	67,797
1896.....	8	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	100,140
1897.....	8	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	65,905
1898.....	6	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	81,234
1899.....	7	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	108,026
1900.....	10	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	128,529
1901.....	11	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	126,092
1902.....	10	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	154,875
1903.....	10	.....	.....	.....	.....	"	"	"	"	"	"	"	"	"	98,669
1904.....	11	.....	.....	.....	.....	93,404	(20,621	Red & Wh. Spr.)	.....	.....	.....	10,315	30,529	.....	154,869
1905.....	12	.....	.....	.....	.....	84,717	(14,598	Red & Wh. Spr.)	.....	.....	.....	7,247	7,523	.....	114,085
1906.....	14	.....	.....	.....	.....	86,394	20,138	.....	.....	.....	.....	16,867	(38,991	Pk. & Ch	162,420
1907.....	13	.....	.....	.....	.....	108,413	10,378	.....	.....	.....	.....	15,247	(25,217	Pk. & Ch.)	*159,255
1908.....	13	.....	.....	.....	.....	139,846	13,374	.....	468	.....	.....	10,075	(45,404	Pk. & Ch.)	209,177



1909.....	12.....	87,901	11,727	742	12,249	(28,120 Pk.&Ch.)	140,739
1910.....	12.....	187,246	9,546	239	11,531	13,473	222,035
1911.....	12.....	131,066	15,514	2,428	23,376	81,956	254,410
1912.....	12.....	92,498	19,332	4,501	39,835	97,588	254,258
1913.....	13.....	52,927	23,250	3,186	18,647	66,045	104,055
1914.....	13.....	130,166	11,529	211	16,378	71,021	237,634
1915.....	13.....	116,553	15,069	204	32,190	107,578	279,161
1916.....	14.....	60,923	18,372	2,561	1,798	73,029	223,158
1917.....	15.....	65,760	13,586	2,699	3,743	47,409	
1918.....	15.....	123,322	16,013	6,828	1,883	148,319	292,219
1919.....	14.....	184,945	19,661	2,656	4,991	161,727	374,216
1920.....	15.....	90,869	37,403	3,123	2,672	117,303	398,877
1921.....	13.....	40,018	18,599	445	1,218	177,679	334,392
1922.....	13.....	100,615	7,080	1,805	45,033	124,457	234,765
1923.....	13.....	131,731	8,863	499	1,050	203,555	362,055
1924.....	13.....	144,732	9,511	1,301	31,967	145,973	338,863
†1925.....	13.....	77,785	17,811	2,457	26,907	181,338	390,967
‡1925.....	13.....	81,149	19,185	2,603	38,029	127,226	276,352
					713	130,083	348,866

\* Approximately.

NOTE.—Licenses issued 1923, 1924 and 1925 include transfers from other districts.

NOTE *re* 1925 figures.—†Pack of fish caught at Skeena River regardless where caught.

‡Pack at Skeena River regardless where caught.



1908.	8	74,452	1,254	9,505	(4,679 k. & Ch.)	89,890
1909.	8	102,527	1,087	1,400	(300 Pk. & Ch.)	105,314
1910.	8	141,921	383	2,075	19	144,398
1911.	8	105,763	1,317	8,287	6,411	127,068
1912.	8	129,217	1,452	11,095	11,723	158,798
1913.	8	79,345	1,589	3,708	4,287	90,944
1914.	*7	89,890	566	7,789	5,784	109,052
1915.	8	162,651	1,022	7,115	2,964	179,431
1916.	9	58,192	1,033	15,314	3,567	112,629
1917.	10	75,326	715	9,124	8,065	113,758
1918.	10	68,447	957	12,074	29,542	128,937
1918.		66,842	957	12,074	29,542	128,937
1919.	11	73,754	967	9,038	6,538	127,332
1919.		72,072	967	9,038	6,538	127,332
1920.	10	142,763	1,537	2,922	26,189	13,053
1920.		133,245	1,537	2,922	26,189	13,053
1921.	10	50,849	386	4,055	3,055	174,938
1921.		49,729	406	4,055	3,055	174,938
1922.	10	68,818	216	1,145	24,311	165,590
1922.		66,518	216	1,145	24,311	165,590
1923.	10	118,502	230	1,526	10,057	58,562
1923.		112,850	230	1,526	10,057	58,562
1924.	10	91,764	215	1,526	10,057	60,569
1925.	11	201,186	344	1,886	15,103	94,990
†1925.		170,581	215	4,887	7,675	92,690
				4,866	8,625	133,930
						127,778
						114,318
						226,030
						196,132

NOTE.—Figures shown in black are packs from fish caught at Rivers Inlet or Smiths Inlet. Figures in black for years previous to 1918 are actual packs. Figures shown in *italic*, 1918 to 1924, are actual packs irrespective of where fish taken and not including fish shipped out for canning in other districts.

\*1914 figures include Rivers Inlet pack only, no figures being available for Smiths Inlet for that year.  
NOTE.—*Re* column "Varieties other than sockeye packed at Smiths Inlet." For the years this column is utilized, figures of the different varieties other than sockeye packed at Smiths Inlet were not available, and had to be shown as a total. Sockeye for these years are shown under their proper heading.

NOTE.—Licenses issued 1923, 1924 and 1925 include transfers from other districts.  
NOTE *re* 1925 figures.—†Pack of fish caught Rivers Inlet and Smiths Inlet regardless where canned. ‡Pack at Rivers Inlet and Smiths Inlet regardless where caught.



## PACK OF CANNED SALMON IN THE FRASER RIVER DISTRICT—1876 TO 1925

STATEMENT No. 5

Year	Num-ber of can-eries oper-ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Churns	Totals
		G.N.	Troll	P.S.	D.S.	T.N.									
1876.....	3	Particulars not available.					"	"	"	"	"	"	"	"	9,847
1877.....	5	"	"	"	"	"	"	"	"	"	"	"	"	"	64,387
1878.....	8	"	"	"	"	"	"	"	"	"	"	"	"	"	105,101
1879.....	7	"	"	"	"	"	"	"	"	"	"	"	"	"	50,490
1880.....	7	"	"	"	"	"	"	"	"	"	"	"	"	"	42,155
1881.....	8	"	"	"	"	"	"	"	"	"	"	"	"	"	142,516
1882.....	11	"	"	"	"	"	"	"	"	"	"	"	"	"	199,104
1883.....	13	"	"	"	"	"	"	"	"	"	"	"	"	"	109,701
1884.....	6	"	"	"	"	"	"	"	"	"	"	"	"	"	38,437
1885.....	6	"	"	"	"	"	"	"	"	"	"	"	"	"	89,617
1886.....	11	"	"	"	"	"	"	"	"	"	"	"	"	"	99,177
1887.....	12	"	"	"	"	"	"	"	"	"	"	"	"	"	130,088
1888.....	12	"	"	"	"	"	"	"	"	"	"	"	"	"	76,616
1889.....	16	"	"	"	"	"	"	"	"	"	"	"	"	"	303,875
1890.....	16	"	"	"	"	"	"	"	"	"	"	"	"	"	241,889
1891.....	11	"	"	"	"	"	"	"	"	"	"	"	"	"	178,954
1892.....	11	"	"	"	"	"	"	"	"	"	"	"	"	"	79,715
1893.....	21	"	"	"	"	"	"	"	"	"	"	"	"	"	457,797
1894.....	20	"	"	"	"	"	"	"	"	"	"	"	"	"	363,967
1895.....	21	"	"	"	"	"	"	"	"	"	"	"	"	"	400,368
1896.....	29	"	"	"	"	"	"	"	"	"	"	"	"	"	356,984
1897.....	35	"	"	"	"	"	"	"	"	"	"	"	"	"	860,459
1898.....	35	"	"	"	"	"	"	"	"	"	"	"	"	"	256,101
1899.....	41	"	"	"	"	"	"	"	"	"	"	"	"	"	510,283
1900.....	48	"	"	"	"	"	"	"	"	"	"	"	"	"	316,522
1901.....	49	3,832	Particulars not available				"	"	"	"	"	"	"	"	990,313
1902.....	42	2,685	"				293,477	Other Varieties:		33,618	"		"		327,095
1903.....	35	3,101	"				204,809	(2,084: Red and White Spring)		"	"		"		237,125
1904.....	23	2,224	"				72,688	(9,482: Red and White Spring)		"	"		"		128,903

1905	38	2,770	"	"	837,459	(5,507. Ped and White Spring)			30,836	3,304	877,136
1906	24	1,746	"	"	183,007	6,503	1,020		34,413	(15,543 Pk.&Ch.)	240,486
1907	18	1,726	"	"	59,815	3,448	557		35,766	(63,550 Pk.&Ch.)	163,116
1908	16	1,374	"	"	63,126	1,427	18		24,198	(415 Pk.&Ch.)	89,184
1909	38	2,688	"	"	542,248	1,428			21,540	(1,987 Pk.&Ch.)	567,203
1910	21	1,577	"	"	133,045	1,018	8,925		27,855	128	223,148
1911	15	1,396	"	"	58,487	7,028	6,751		39,740	142,101	301,344
1912	15	1,430	"	"	108,784	14,635	8,373		38,574	574	173,921
1913	35	2,560	"	"	684,596	3,573	49		11,648	9,973	732,059
1914	20	2,650	"	"	185,483	9,485	14,000		38,639	6,057	328,390
1915	22	2,616	"	"	89,040	15,388	3,532		34,114	128,555	289,119
1916	21	2,240	"	"	27,394	11,096	9,217		24,580	840	106,440
1917	29	2,626	8		123,614	10,197	18,916		25,895	134,442	377,938
1918	18	1,582	19		16,849	15,192	24,274		40,111	18,388	86,215
1919	14	1,337	24	1	29,628	14,519	704		39,363	39,363	158,718
1920	11	1,288	28		44,598	19,961	2,188		22,934	12,839	132,860
1921	13	1,437	25		35,900	11,360	467		29,978	8,178	103,917
1922	10	1,296	17		48,744	10,561	3,867		23,587	29,578	137,482
1923	11	964	25		29,423	3,854	664		20,173	63,645	224,637
1924	9	969	48		36,200	2,952	592		21,935	31,968	209,050
1925	10	969	50		31,523	7,335	873		36,717	99,800	272,993
							25,482	5,107			

NOTE.—Licenses issued 1923, 1924 and 1925 include transfers from other districts.

## MARINE AND FISHERIES

## STATEMENT No. 6

## PACK OF CANNED SALMON OF PUGET SOUND FROM 1887 TO 1925

Year	Number of canneries operated	Spring	Sockeye	Cohoe	Chum	Pink	Steel- head	Total
1887.....		Particulars of varieties not available.						22,000
1888.....	4	"	"	"	"			21,975
1889.....	2	240		7,480	1,145	2,890		11,674
1890.....	1	1,000		3,000	4,000			8,000
1891.....	2	382	5,538	5,869	3,093	5,647		20,529
1892.....	2	86	2,954	7,206	16,180			26,426
1893.....	3	1,200	47,852	11,812	11,380	17,530		89,331
1894.....	3		41,781	22,418	22,152	9,049		95,400
1895.....	7	1,542	65,143	50,865	38,785	23,633		179,968
1896.....	11	13,495	72,979	82,640	26,550			195,664
1897.....	12	9,500	312,048	91,900	23,310	57,268		494,026
1898.....	18	11,200	252,000	98,600	38,400			400,200
1899.....	19	24,364	499,646	101,387	31,481	252,733		919,611
1900.....	19	22,350	229,800	128,200	89,100			469,450
1901.....		Particulars of varieties not available.						1,380,590
1902.....	21	30,049	372,301	85,817	93,492			581,659
1903.....	22	14,500	167,211	103,450	12,001	181,236		478,488
1904.....	13	14,441	109,264	118,127	49,656			291,488
1905.....	24	1,804	825,453	79,335	41,057	70,992		1,018,641
1906.....	16	8,139	178,748	94,497	149,218			430,602
1907.....	14	1,814	93,122	119,372	50,249	433,423		698,080
1908.....	22	95,210	170,951	128,922	47,607	6,075		448,765
1909.....	11	13,019	1,097,904	143,133	53,688	370,993		1,632,949
1910.....	24	10,064	248,014	162,755	146,942	108		567,883
1911.....	15	21,823	127,761	256,124	104,321	1,046,992		1,557,029
1912.....	20	20,252	184,680	149,727	60,760	700		416,125
1913.....	22	1,234	1,673,099	61,019	56,225	791,886		2,583,463
1914.....	31	26,044	335,230	151,893	278,801	892		792,860
1915.....	41	28,466	64,548	180,783	411,724	583,649		1,269,206
1916.....	32	37,030	84,637	155,832	427,878	1,887		707,278
1917.....	45	57,543	411,538	114,276	216,285	1,124,884		1,921,554
1918.....	32	63,366	50,723	235,860	267,538	6,605		624,198
1919.....	35	68,542	64,346	210,883	525,541	421,215	5,076	1,295,626
1920.....	11	25,846	62,654	24,502	48,849	4,669		166,520
1921.....	23	25,567	102,967	89,412	30,831	404,713		653,490
1922.....	16	20,615	48,566	111,711	65,552	2,225	106	248,729
1923.....	18	15,777	47,402	122,000	97,081	475,849	29	758,138
1924.....	12	19,968	69,369	87,879	134,360	5,945	128	317,649
1925.....	23	28,268	106,064	171,587	41,635	555,848	141	903,543

## STATEMENT No. 7

## STATEMENT OF HALIBUT LANDINGS—BRITISH COLUMBIA, 1913 TO 1925

	Cwts.
1913.....	223,465
1914.....	214,444
1915.....	194,896
1916.....	123,062
1917.....	113,529
1918.....	186,229
1919.....	210,777
1920.....	238,770
1921.....	325,868
1922.....	293,184
1923.....	334,667
1924.....	331,382
1925.....	318,240



## STATEMENT OF DRY SALT HERRING PACKS, 1918 TO 1925

## STATEMENT No. 8

Year	District No. 1	District No. 2	District No. 3		Total
			East Coast	West Coast	
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1918.....	20,000	Nil	109,900	42,710	172,610
1919.....	4,000	Nil	43,000	208,058	255,058
1920.....	807	1	176,640	334,720	512,168
1921.....	249	Nil	231,240	248,482	479,971
1922.....	Nil	Nil	297,871	224,897	522,768
1923.....	Nil	8,935	250,420	484,681	744,036
1924.....	Nil	Nil	305,266	548,277	853,543
1925.....	Nil	4,120	487,892	591,162	1,083,174

## STATEMENT No. 9

STATEMENT OF WHALES LANDED AT WHALING ESTABLISHMENTS IN  
BRITISH COLUMBIA DURING 1925

Species	Kyuquot Plant	Rose Harbour Plant	Naden Harbour Plant	Total
Sperm.....	3	51	22	76
Fin.....	35	57	43	135
Hump.....	8	23	9	40
Sei.....	35	30	3	68
Sulphur.....	.....	13	16	29
Bottlenose.....	1	2	.....	3
Totals.....	82	176	93	351

STATEMENT SHOWING INCREASE OR DECREASE IN LICENSES ISSUED IN 1925 OVER LICENSES ISSUED IN 1921 AND 1922,  
BRITISH COLUMBIA

STATEMENT No. 10.

Variety of License	Area	Licenses issued, 1925				Increase over 1922				Decrease from 1922				Totals all kinds	
		Whites	Indians	Japs.	Total	Whites	Indians	Japs.		Whites	Indians	Japs.		Net in- crease	Net de- crease
Salmon gill-net.....	Whole province. Percentage.....	1,963	1,247	1,015	4,225	493	215	.....	.....	.....	.....	974	.....	266	.....
"	District No. 1. Percentage.....	485	39	445	969	33.5	20.8	.....	.....	.....	.....	48.9	.....	5.9	.....
"	District No. 2— Naas River. Percentage.....	12	117	81	210	95	5	.....	.....	.....	.....	427	.....	327	.....
"	Skeena River. Percentage.....	339	401	327	1,067	24.4	14.7	.....	.....	.....	.....	48.9	.....	25.2	.....
"	Rivers Inlet, and Smiths Inlet. Percentage.....	643	403	81	1,127	76	.....	.....	.....	.....	.....	76	.....	64	.....
"	Outlying..... Percentage.....	278	128	56	462	13.4	.....	.....	.....	.....	.....	48.4	.....	5.4	.....
"	Total District No. 2. Percentage.....	1,272	1,049	545	2,866	43	49	.....	.....	.....	.....	55	.....	37	.....
"	District No. 3. Percentage.....	206	159	25	390	18.3	62.0	.....	.....	.....	.....	49.5	.....	8.7	.....
Boat.....	Whole province. Percentage.....	123	12	82	217	279	99	.....	.....	.....	.....	523	.....	145	.....
Buyers.....	Whole province. Percentage.....	41	.....	20	61	28.1	10.4	.....	.....	.....	.....	48.9	.....	4.8	.....
						119	111	.....	.....	.....	.....	24	.....	206	.....
						136.8	231.3	.....	.....	.....	.....	48.9	.....	111.9	.....
						46	6	.....	.....	.....	.....	83	.....	31	.....
						59.7	100.0	.....	.....	.....	.....	50.3	.....	12.5	.....
						.....	.....	.....	.....	.....	.....	21	.....	65	.....
						.....	.....	.....	.....	.....	.....	51.2	.....	51.6	.....

Salmon trolling.....	Whole province.....	1,091	539	191	1,821	482	200	.....	.....	.....	313	369	.....
"	Percentage.....					79.1	58.9	.....	.....	.....	62.1	25.4	.....
"	District No. 1.....	50			50	26		.....	.....	1		25	.....
"	Percentage.....					108.3		.....	.....	100.0		100.0	.....
"	District No. 2.....	328	182		510	104	49				5	148	
"	Percentage.....					46.4	36.9				100.0	40.9	
"	District No. 3—	503	103	80	686	265	38				113	190	
"	East Coast.....					111.3	58.4				58.5	38.3	
"	Percentage.....												
"	West Coast.....	210	254	111	575	87	114				195	6	
"	Percentage.....					70.7	81.4				63.7	1.1	
"	Total District No. 3..	713	357	191	1,261	352	152				308	196	
"	Percentage.....					97.5	74.1				61.7	18.4	

STATEMENT SHOWING THE NUMBER OF SALMON GILL-NET LICENSES,  
DISTRICT NO. 2 USING POWER BOATS

STATEMENT No. 11.

Division	White	Indian	Japanese	Total
Naas.....	1	8	.....	9
Skeena.....	48	16	.....	64
Central.....	1	7	.....	8
Bella Coola.....	9	3	.....	12
Rivers Inlet.....	95	9	6	110
Smiths Inlet.....	38	1	.....	39
Total.....	192	44	6	242

NOTE.—Four of the licensees with power boats fished at both Rivers Inlet and at the Central Division.



SUMMARY—BRITISH COLUMBIA—COMPARATIVE STATEMENT OF LICENSES ISSUED, SEASON 1922-1925, AS AT DECEMBER 31, 1925  
STATEMENT No. 12.

	Season 1922						Season 1923						Season 1924						Season 1925													
	Whites		Inds.		Japs.		Total		Whites		Indians		Japs.		Totals		Whites		Indians		Japs.		Totals		Whites		Indians		Japs.		Totals	
	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.	Issued	Trans.		
Salmon Cannery.....	64	61	36	31	6	61	61	30	62	2	32	30	30	62	32	28	67	9	28	67	9	32	28	67	9	28	67	9	32	28		
Salmon Drag-seine.....	36	44	9	61	5	49	49	55	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55		
Salmon Curing.....	61	44	9	61	5	49	49	55	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55	1	104	55		
Salmon Gillnet.....	1,470	1,032	1,989	4,491	1,468	187	3,755	214	1,094	27	1,193	1,335	1,335	2,559	1,045	29	1,179	1,676	287	1,196	52	3,887	339	1,470	1,032	1,989	4,491	1,468	187	3,755		
Salmon Purse-seine.....	143	192	29	2	1	194	29	15	36			191	227	15	227	60	1	242	302	60	1	242	302	60	1	242	302	60	1	242		
Salmon Trapnet.....	4	68	1	409	249	1,446	6	773	3	552	12	101	201	1,550	3	1,073	17	539	191	1,803	17	539	191	1,803	17	539	191	1,803	17	539		
Salmon Trolling.....	743	332	1,513	698	8	96	188	88	98	12	101	201	1,550	3	1,073	17	539	191	1,803	17	539	191	1,803	17	539	191	1,803	17	539	191		
Boat (Buyers).....	438	438	41	126	25	201	881	322	9	626	25	201	881	322	9	626	25	201	881	322	9	626	25	201	881	322	9	626	25	201		
Buyers.....	85	168	349	539	8	96	188	88	98	12	101	201	1,550	3	1,073	17	539	191	1,803	17	539	191	1,803	17	539	191	1,803	17	539	191		
Assistant Salmon Seine.....	49	38	139	28	30	58	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2		
Captain Salmon Seine.....	49	38	139	28	30	58	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2	174	122	122	2		
Assistant Salmon Gillnet.....	2	121	528	992	343	528	992	149	1	323	535	1,007	1	1,007	1	180	1	373	510	1,033	1	373	510	1,033	1	373	510	1,033	1	373		
Experimental Salmon Cannery.....	2																															
Pilchard and Herring Cannery.....	2																															
Herring Curing.....	12	23	10	22	6	29	4	22	3			3	22	3		2		25	5	30			25	5	30							
Herring Drag-seine.....	12	23	10	22	6	29	4	22	3			3	22	3		2		25	5	30			25	5	30							
Herring Gillnet.....	19	38	21	32	11	32	3	29	3			3	29	3		1		22	10	32			22	10	32							
Herring Purse-seine.....	24	37	5	29	3	40	3	35	3			3	35	3		3		49	7	52			49	7	52							
Captain Herring Seine.....	1	15	7	9	9	31	1	22	22	7	8	37	22	37	8	28		49	10	59			49	10	59							
Abalone Cannery.....	1																															
Abalone Fishery.....	2																															
Cod and Rock Cod Gillnet.....	34	100	135	24	62	86	4	22	3			3	22	3		2		33	8	30			33	8	30							
Cod Hook and Line.....	88	5	99	102	19	124	3	378	115	15	183	115	15	183	115	15	183	115	15	183	115	15	183	115	15	183	115	15	183	115		
Crab Fishery.....	31	89	120	15	3	25	40	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30		
Grayfish Gillnet.....	31	89	120	15	3	25	40	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30		
Grayfish Hook and Line.....	31	89	120	15	3	25	40	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30	42	12	122	30		
Miscellaneous Cannery.....	4	4																														
Reduction Works.....	4	4																														
Shellfish Cannery.....	9	12	4	9	5	12	4	12	16	3	5	16	3	5	16	3	5	16	3	5	16	3	5	16	3	5	16	3	5	16		
Smelt Drag-seine.....	13	27	6	22	17	23	6	27	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19		
Smelt Gillnet.....	13	27	6	22	17	23	6	27	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19	3	5	19		
Smelt Purse-seine.....	2	3	3	3	2	2	3	3	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6		
Sturgeon.....	2	3	3	3	2	2	3	3	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6		
Whale Cannery.....	2	3	3	3	2	2	3	3	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6		
Whale Factory.....	2	3	3	3	2	2	3	3	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6	2	2	6		
Grayfish Drag-seine.....	1	1																														
Grayfish Purse-seine.....	1	1																														
Grayfish Weir.....	1	1																														
Groundfish Drag-seine.....	10	2	12	7	1	7	1	14	14	1	1	16	1	16	1	1	20							20								



## APPENDIX 2

## REPORT ON ACTIVITIES OF MARINE BIOLOGICAL BOARD FOR 1925

By J. J. COWIE, *Secretary-Treasurer*

The board is charged with the control of the various Biological stations and the investigations undertaken thereat. It meets once a year at Ottawa, and at such places and times as may be found absolutely necessary for the carrying on of the work of the board.

A committee called the Executive Committee is charged with the supervision and carrying out of the undertakings involved in the policies formulated by the board. A sub-executive on the Atlantic, and another on the Pacific coast, has immediate supervision, under the executive committee, of the local activities of the board's staff of workers at the stations.

## BIOLOGICAL STATION AT ST. ANDREWS, N.B.

The Station at St. Andrews, N.B., provided accommodation or field facilities during the season of 1925 for twenty-seven investigators, who continued their investigations during the following winter at their respective universities. There were from the various universities the following numbers of investigators: Western (London), three; Toronto, eight; Queen's (Kingston), four; Montreal, one; McGill (Montreal), four; New Brunswick (Fredericton), two; St. Francis Xavier (Antigonish), one; Dalhousie (Halifax), three; and Manchester (England), one.

The subjects investigated were as follows: abnormal development of fish eggs, lethal temperatures of various organs in fishes, algae of Passamaquoddy bay, factors for diatom maxima, life history of cod, ecology of periwinkle, effect of light on marine crustacea, lethal temperatures for molluscs, culture of entomostraca, temperature needs for oyster development, chemistry of haddock muscle, effect of light on growth of algae, temperature and salinity needs for mackerel development, biological interpretation of fisheries statistics, rigor mortis of fish muscle, digestion in Cladocera, lactic acid in fish muscle, blood sugar levels in certain fishes, physiology of the spleen and other organs in fishes, temperature behaviour of connective tissue of fishes, hydrography of Halifax and St. Andrews regions, copepods in the food cycle of the sea, life-history of the shad, physical requirements of the shipworm (in co-operation with National Research Council), character of Mackerel schools. A survey was made of the Caraquet oyster-beds, and a general biological survey of Halifax harbour, including Bedford basin. A start was made with the program for the tagging of cod, haddock, and mackerel. Certain laboratory facilities were provided for collectors of the Royal Ontario Museum of Zoology, and laboratory accommodation and facilities were provided for Dr. L. H. Almy of the U.S. Bureau of Chemistry for an investigation of the "rotting" of "feedy" sardines. The U.S. Bureau of Fisheries gave Dr. A. H. Leim, Assistant Director of Atlantic Biological Station, facilities at Gloucester, Massachusetts, for a study of the physical needs for the development of cod, haddock and pollock.

The following is a list of the Investigators who worked at the station, and the problems tackled by each:—

Miss H. I. Battle, Western University: Abnormal development of eggs; comparative lethal temperatures of fish tissues.

H. P. Bell, Dalhousie University: Distribution of Algae.



- Miss V. M. Davidson, Toronto University: Medusae in relation to Diatom Production.
- G. L. Duff, Toronto University: Life History of Cod.
- A. H. Gee, Toronto University: Journalistic Articles on Work of Stations.
- J. H. Harvey, Toronto University: Effect of Sunlight on Marine Animals.
- R. V. Hayes, Dalhousie University: Ecological Relationships of Periwinkles.
- Miss J. T. Henderson, McGill University: Comparative lethal temperatures of Bivalve Mollusks.
- A. B. Klugh, Queen's University: Culture of Cladocera and experiments in measuring light.
- T. Kurata, Royal Ontario Museum: Preparation of Museum Material.
- L. J. Laporte, Montreal University: Oyster Studies.
- A. H. Leim: Investigation of Chamcook Lake.
- F. J. Logan, McGill University: The Proteins of Fish Muscle.
- S. G. Logier, Royal Ontario Museum: Preparation of Museum Material.
- J. R. Martin, Queen's University: Light Intensity and the Growth of Algae.
- R. H. M'Gonigle, Toronto University: Limiting Factors for Larvae of Bivalve Molluscs.
- Miss J. R. Pantem, Toronto University: Rigor Mortis of Fish Muscle.
- G. R. Rankin, Queen's University: Physiology of Cladocera.
- A. D. Ritchie, Manchester University: Lactic Acid in Fish Muscle.
- W. W. Simpson, Toronto University: Blood Sugar in Fishes in Relation to the Action of Insulin.
- J. Tait, McGill University: Heat Contraction of Fish Connective Tissue, Structure and Function of Fish Spleen.

#### EXPERIMENTAL STATION AT HALIFAX

The Atlantic Experimental Station for Fisheries was established at Halifax, N.S., in the spring of 1925, on a portion of the King's wharf, made available by the Department of Militia and Defence. Old buildings were converted for the purpose of the station so as to furnish experiment, work and demonstration rooms, biochemical, bacteriological, and special laboratories, library, offices, and board room in the main building, and a smoke-house in one of the out-buildings. Committees were formed of men in the fishing industry and of representatives of Dalhousie University and the Nova Scotia Technical College as follows: a general advisory committee, a committee on the smoking of fish, a committee on fish refrigeration.

On the educational side there have been the following: Publication of a bulletin on the prevention of blackening in lobster canning. Preparation of bulletins on the processing of dried fish and on the smoking of fish. Addresses by the Director in Halifax, Moncton, Yarmouth, Lunenburg, Liverpool, and Canso. Answering of queries concerning methods of fish curing. Collection of data on present methods in the fishing industry. Public exhibit in Halifax of foreign and domestic cures of dried fish. Scientific and practical course for hatchery officers held at Truro, N.S., under the Chairman of the Board as Acting Educator.

Technical service was furnished the industry in the following directions: effect of icing on subsequent drying of fish, comparative deliquescence of various grades of salt; analyses of fish meal.

On the experimental side the station was asked by the General Advisory Committee to take up the subject of the smoking of fish. Six experienced investigators were employed during the summer of 1925 and two of these were continued during the following winter season. In addition to general experimentation in smoking, special attempts were made to ascertain the scientific principles on which the successful preparation of smoked fish under varying

local or atmospheric conditions could be based. In this connection the following reports have been prepared.

Experiments on the production and the chemistry of wood smoke, in connection with the fish smoking industry, by J. A. Dauphinee, M.A.

Investigation into the tensile strength of fish muscle before and after treatment, by J. C. Forbes, Ph.D.

Effect of smoke on the tensile strength of fish muscle, by J. C. Forbes and J. A. Dauphinee.

Influence of smoke and its constituents on the bacteria in the smoke-curing of fish, by Ernest Hess, M.A.

The Micro-organisms responsible for the spoiling of fish muscle, by A. H. Gee, M.A., Ph.D.

Protein changes in pickled and smoked fish, by N. B. Dreyer, B.A.

Other reports are in preparation.

These investigations have among other things brought out the following. The sheen desired in smoked fish is an extreme example of case hardening through rapid surface drying, a thin skin about one-four-hundredths of an inch in thickness being formed. The drying cannot be too rapid for this. Early smoking affects unfavourably the smoothing of the surface of the skin, and late smoking ensures its permanence. The strength of the fish to stand handling and to keep from dropping when hung is improved by brining, by drying, and by the application of smoke. Weak acid emphasizes the action of brining, but, when alone, acid is objectionable in this regard. The substance in smoke, that is important for strengthening the fish is formaldehyde. Both brining and smoking give the final product longer life, that is better keeping qualities. This is through the disinfectant action of the salt and certain constituents of the smoke on the bacteria of spoilage. This disinfectant action is continued for a time after the fish are removed from the smoke. The principle substance in the smoke for disinfectant action is formaldehyde. The yellow or amber colour of the smoked fish is due to an oxidation-product of pyrogallol, which is present in the smoke. Smoke from wood heated away from air is very ineffective in colouring the fish. The colour is enhanced by previous treatment of the surface of the fish with a weak alkali by the presence of formaldehyde, and by exposure of the fish to air for some hours subsequently to smoking. Formaldehyde applied in the form of vapour acts on the fish, so as to give, after cooking, a definite and agreeable flavour. Smoke from wood heated away from air gives a distinctly disagreeable flavour to the fish. Increase in the amount of air reaching the heated wood results in a decrease in the amount of acetic acid and an increase in the amount of formaldehyde in the smoke.

Experiments in the development of an economical commercial quick freezer for fish have been continued. These have demonstrated that a comparatively cheap and very effective apparatus for brine-freezing fish can be connected up satisfactorily with the brine-system of an ammonia refrigerating plant. In previous experiments an efficient salt and ice apparatus had been developed.

The station has been in receipt of considerable assistance and courtesy from various men and firms in the fishing industry, and from Dalhousie University and the Nova Scotia Technical College, as well as from various members of their staffs.

#### BIOLOGICAL STATION AT NANAIMO, B.C.

Special attention was given to the collection and naming of all marine animals and plants of the coast and studies of their life histories, distribution, etc. This information must form the basis of experimental and economic work. Drs. O'Donoghue, University of Manitoba, and Fraser, University of British Columbia, have carried this work forward as well as Mrs. Berkeley, Messrs. Wailes, Cornwall and Fee.



Work in marine bacteriology has been commenced by Mr. Berkeley.

Biochemical studies of fish, clams and crabs have been carried on by Dr. Collip, University of Alberta, and his assistant Dr. Clark.

Studies of the anatomy of fish and other forms have been made by Dr. O'Donoghue, Dr. Craigie, Mr. Bolton and Miss Mather.

Scale studies of sockeye salmon have been carried out by Dr. Clemens, partly in association with the Department of Fisheries of British Columbia.

A comprehensive study of the life-history of the ling cod and the economic phases of the fishery is being conducted by Mr. Wilby of the University of British Columbia.

A considerable amount of data is being collected relating to the life histories of herring and salmon.

A continuous record of temperatures, specific gravities and hydrogen-ion concentrations is being obtained at Departure bay and of temperatures at William head, near Victoria. (It is planned to commence extensive oceanographical studies this year. This will include the collection of temperature records, salinities, etc., along the coast and quantitative samples of plankton microscopic plants and animals.) All this information is necessary in studies of fish distribution and movements and in connection with problems connected with the propagation and conservation of such animals as crabs, oysters and clams.

The Biological Board is co-operating with the international Fisheries Commission which is studying the problem of the conservation of the Pacific halibut.

The board is also taking an active part in the international Pacific Salmon Investigation Federation which has as one of its main objects the co-ordination of scientific studies of the various species of Pacific salmon.

#### LIST OF WORKERS

Mrs. C. Berkeley, Nanaimo: Systematic and distributional study of polychast worms.

Miss Alfreda Berkeley, Nanaimo: Systematic and distributional study of Ophiurans.

Mr. L. L. Bolton, University of Toronto: Anatomy of the digestive tracts of fish.

Dr. E. P. Clark, University of Alberta: Calcium metabolism in various species of fish, crabs and mollusks.

Dr. J. B. Collip, University of Alberta: Calcium metabolism in various species of fish, crabs and mollusks.

Rev. Robert Connell, Victoria: Systematic and distributional study of sea weeds.

Dr. E. H. Craigie, University of Toronto: The vascularity of the brain of the dogfish and the sex ratios among fish.

Dr. Francis E. Lloyd, McGill University: Fluorescence in algae.

Miss Vera Mather, University of B.C.: Comparative study of the endostyle and thyroid in Ascidia and lampreys and a study of the musculature of the branchial apparatus of lampreys.

Dr. C. H. O'Donoghue, University of Manitoba: Systematic and distributional studies of mudibranchs, Bryozoa and crabs.

Mrs. C. H. O'Donoghue, Winnipeg: Systematic and developmental studies of Bryozoa and a systematic study of crabs.

Mr. G. Van Wilby, University of B.C.: Life-history of the ling cod and economic aspects of the ling cod fishery.



## EXPERIMENTAL STATION, PRINCE RUPERT, B.C.

*Fish Refrigeration.*—Mr. D. B. Finn, B.Sc., in charge. Carried out researches on Atlantic coast for about four months. Visited refrigeration plants on Atlantic coast, Montreal, Port Dover, Winnipeg and Vancouver. Has established temporary quarters at Prince Rupert, pending erection of station building and will carry out experimental work in plant at Canadian Fish and Cold Storage Company, at Prince Rupert. Mr. Roger Reid, B.Sc., assistant in fish refrigeration, has prepared bibliography on refrigeration.

*Fish Oils.*—Mr. H. Brocklesby, University of Manitoba, has been studying fish oils, especially that of dogfish livers and will spend next summer on Pacific coast.

*Salmon Movements.*—Dr. H. C. Williamson in charge. Tagged spring salmon during period of six weeks off west coast of Vancouver island. Results showed southerly movement of these fish to Fraser river, Puget sound, Columbia river and a few to Sacramento river, California.

Tagged spring salmon off west coast of Queen Charlotte islands over period of about four weeks. Result showed generally southerly movement to Fraser river, Puget sound and Columbia river, but a few went eastward to the Skeena. Tagged sockeye salmon at Wales Island near Alaskan-Canadian boundary. Results showed majority of these fish went to Naas river, some southward into Skeena river and some northward into Alaskan waters. Tagged sockeye salmon near Seymour Narrows east coast of Vancouver island. Results showed that practically all these fish went to the Fraser river and thus definitely established that a portion of the Fraser river run comes in from the sea around the north end of Vancouver island.

Dr. Williamson will continue the salmon tagging work next year and will tag throughout the fishing season on the west coast of Vancouver island.

*Sockeye Salmon Races.*—Dr. Williamson has been making a special detailed study of the races of sockeye salmon occurring in the Fraser river.

Next summer it is planned to carry out special studies of clams, crabs and oysters on Pacific coast.

## FISH CULTURAL INVESTIGATIONS

In view of the doubts publicly expressed as to whether the results from artificial fish culture were such as to justify the expenditures being made on that service, the department in the end of the year 1924 asked the board for some authoritative opinion thereon. The board at a special meeting carefully considered the matter and came to the conclusion that there is at the present time insufficient knowledge to enable it to say that the present fish cultural work of the department is or is not justified by economic results; that a thorough scientific investigation be immediately commenced covering a period of years to furnish the basis of knowledge for economically successful artificial fish propagation; that pending these investigations the Department give more attention to assisting the natural propagation, and that the existing hatcheries be maintained so far as in the opinion of the department they may be justified. The board was, therefore, authorized to formulate plans for such investigation and to go ahead with it. Consequently, in the spring of 1925 a Research Committee of the board was formed for this purpose. The Research Committee considered that two courses were open. The first to do away with the present system of artificial propagation and build up a rational practice based strictly upon investigation and experience. The alternative to continue the present system and steadily modify it on the basis of investigation and experience. This

latter course has been adopted, and is to be continued until it shows sufficient promise of success. With this end in view, the Research Committee has in hand intensive investigations at Cultus lake, B.C., which will ultimately determine the results from artificial propagation of sockeye as compared with natural propagation of that species of salmon. With the same end in view, investigations are going on in Eastern Canada with a view to determining the value of the artificial propagation of trout.

In addition to these investigations during 1925, the Research Committee carried on investigations in the Jasper Park lakes and other lakes of the West.

#### COURSES OF INSTRUCTION

During the first half of August, 1925, the board provided a course of instruction for fish hatchery officers of Eastern Canada. The course was held at Truro, N.S., under the direction of Dr. A. P. Knight, Chairman of the Board. Those assisting him were Professor Barteaux, of Truro Agricultural College; Professor Harlow, Truro Agricultural College; Mr. George Jeffers and Mr. H. C. White, employees of the board. Thirteen of the hatchery superintendents attended the course. The principle on which the program of study was made up was the same as that followed in scientific schools and universities, viz., that the teaching of physics and chemistry should precede the teaching of the other natural sciences, because a knowledge of physics and chemistry forms the necessary foundation for a knowledge of the other sciences. Besides elementary physics and chemistry, parts of biology and fish culture were also taught. The biology was limited to a brief outline of the anatomy and physiology of the trout. The fish culture was limited to a study of limnology, or that science which treats of ponds, lakes, brooks and rivers, and the substances for fish and fry which are found in them.

## APPENDIX 3

OBSERVATIONS ON THE AMERICAN LOBSTER (*Homarus Americanus*)By Mr. ANDREW HALKETT, *Naturalist*

Early in the present year Mr. J. J. Cowie recommended that during the lobster fishing season in the portion of the strait of Northumberland where large lobsters known as "jumbos" are brought to the canneries, I should be instructed to investigate into the matter from the viewpoint of the value of those large lobsters as reproducers.

On the strength of his recommendation I was notified to undertake the work, and therefore gave it close and varied attention.

There was no way, however, owing to promiscuous circumstances attending the bringing in of the lobsters to the canneries or in their being passed on to the boilers, for me to pursue a regular systematic course of investigation, and I was, therefore, subject to whatever opportunities presented themselves when visiting the canneries or in seeing lobsters where for the time being they were moored in crates.

Nevertheless by persistently observing whatever was on hand to observe, I ascertained to the satisfaction of my own mind that the taking of those mature and full grown lobsters is a detriment and injury to the welfare of the industry.

In fact I concur in the judgment of intelligent and experienced canners that no lobsters over 13 inches should be allowed to be taken. The canners, as a rule, do not want large lobsters, let alone so called "jumbos" as they entail loss to the industry. A manager of a cannery told me that the expenses for one season for large lobsters stood 25 per cent. Earlier in the season I saw at Cote Ste. Anne a boiled lobster, 16 inches, 8½ pounds when alive, 8 pounds when boiled, for which the manager paid \$1.06, and which he did not want. The trouble is with the fishermen who are blind to their own interests.

There are fishermen who say that the great big overgrown, covered-with-barnacles, lobsters are males, and in that assertion, if taken by itself, there is a measure of truth in what they say. But such fishermen do not look further nor get anywhere near what is involved in destroying mature, reproducing lobsters, whether males or females, and these valuable lobsters, irrespective of sex, may, on account of their size, well be termed the real reproducers.

The story is therefore not all told when fishermen speak as they do. Well do I know beforehand on hearing that there is a big "jumbo", with enormous claws and all covered with barnacles upon its coarse, rugged shell, to be shown, that I am going to see a male. But these are merely secondary matters, masculine lobster characteristics. But there are corresponding feminine characteristics. A large female lobster is not tempered as coarsely as a male, and does not present as formidable an appearance.

It is perfectly true that there are far more enormous males than there are enormous females, in my recent observations the percentage was about 87½ in the former and about 12½ in the latter in about 60 large lobsters, but as is known from past determinations the percentage of the sexes stands about 50 to 50, so that the large females, although as a rule, not attaining to the huge dimensions of the males are equally as valuable as reproducers.

Something more direct may tend to show this.

I came across a female 18½ inches, 8 pounds, which had a new, still pliable shell. Practically there was little or no meat in this lobster, and its value lay in the eggs that would have been. But this lobster was for the boiler.



Another female,  $14\frac{1}{2}$  inches, 4 pounds, showed indications of being ready to extrude her eggs, and had long hairs for the purpose on the swimmerets; and another, 14 inches,  $3\frac{1}{2}$  pounds, had a new shell, with only one claw, and there were indications that eggs would soon have been extruded.

Another female 16 inches, 5 pounds, had a new pliable shell and little or no meat.

These instances I produce to show the waste that is going on, and there are many such.

The value of the "jumbo" males lies in the enormous number of sperms which they possess. These were magnified and compared with the sperms of an  $8\frac{1}{2}$  inch male and a  $10\frac{3}{4}$  inch male, and the sperms of all three were essentially the same, the vital difference in the "jumbos" being that the number of sperms were, owing to their greater size, enormously greater.

In any sized lobster the sperms under the microscope can be seen in great masses, in plate II, figure 10, I have spread a few of them out so as to convey an idea of their shape and apparent size when magnified 500 diameters.

The investigations were made at Cape Spear, Cape Tormentine, Borden, and Point Traverse.

On the New Brunswick side of the strait Overseer Prescott greatly facilitated my work through having attended to preliminaries against my arrival in his district, and helped me much when I was in it.

On the Prince Edward Island side Inspector Gallant and Overseer Square-briggs facilitated my work greatly. Inspector Gallant was with me during one whole day, when as everything was favourable much information was gained.

I have also to express indebtedness to managers at canneries who courteously gave me every access in examining lobsters, in having them retained for me until examined, and in other respects aided me besides.

There is one question that I can hardly deal with. It concerns the dimensions of the entrance spaces to the traps. Canners seem to be averse to having any change in that respect, and emphasize that a regulation should simply prohibit the bringing in of lobsters of sizes as determined by law. They seem to maintain that a smaller entrance space, to be enforced, might only lead to complications, but they seem to be as a rule desirous to have the large lobsters conserved and that to bring them in should be strictly prohibited.

While at Cape Tormentine I received a telegram from the Department to go to Charlottetown to deliver an address before a Lobster Packers' meeting. The address was given extemporarily as I had no time to prepare a paper, and seemed to be well received.

The maps (represented in blue-prints) and a facsimile of Mr. Watson's graph are by Mr. C. C. Bruce, Chief Engineer of the Fisheries, the tabulations were prepared from my manuscripts under his supervision, and the plates with their figures (represented in blue-prints) are my own.

## APPENDIX 4

REPORT ON FISHWAYS AND REMOVAL OF OBSTRUCTIONS,  
BY CHAS. BRUCE, FISHERIES ENGINEER

The following report furnishes in detail information regarding inspections, construction of fishways and removal of obstructions to the ascent of fish.

## NOVA SCOTIA

1. *Tusket River, Yarmouth Light and Power Company, Limited.*—As intimated in the previous annual report, extensive modifications to the power dam were carried out during the last year, thus rendering the fishway, which had only recently been completed, ineffective. An inspection and survey of requirements for modifying the fishway were made and plans for the completion thereon served on the company.

2. *Salmon River, Yarmouth County.*—

- (a) A dam owned by Samuel Durkee, Pleasant Valley, Yarmouth county, was inspected and information secured for the design of a fishway therein.
- (b) A dam owned by Parker Eakins & Company was inspected and information secured for the design of a fishway therein.

3. *Clyde River, Shelburne County.*—The fishway constructed in 1924 by the Clyde Pulp Company, Limited, at Queens was inspected and found to be in good order. The diversion of practically the entire discharge of the river through the power canal to the pulp mill at critical periods during the ascent of salmon and sea trout proves the most serious obstacle to the entire success of this fishway.

4. *Broad River, Queens County.*—An inspection of a fishway in a small dam at the mouth of this river was made and suggested alterations to improve the passage for fish discussed with the owner, who agreed to carry out the necessary work. Broad river has a fair run of sea trout entering it, which makes an adequate fishway desirable.

5. *Mersey River, Queens County.*—In view of the fact that there was in prospect extensive development on this river, including the construction of paper and pulp mills, information was sought as to the possible effect of such development on the fisheries.

While nothing definite could be learned owing to the uncertainty at the time as to just what form development of the water-power might take, it seemed reasonably certain that provision for the ascent of salmon could be made.

6. *Medway River, Queens County.*—Owing to the fact that it was very difficult for alewives to ascend the fishway through the pulp mill dam at Salter's Falls, particularly at high water, and that numbers of them were being killed, it was decided to make certain modifications. A survey revealed that it would be impossible to accomplish the desired results by using the existing fishway, owing to excessive grade. It was accordingly necessary to reroute the fishway entirely, the work involving extensive blasting and concrete construction.

As this work was an alteration to an existing fishway, which had been built by the owners of the dam, it was done by the department under subsection 4 of section 31 of the Fisheries Act at a cost of \$505.49.

7. *Branch Brook, Lunenburg County.*—Representations having been made that this brook should be cleared for the passage of alewives, an inspection was

made. The brook was found to be of very little importance and small in volume. As it would have required probably \$300 to make it reasonably passable, in addition to the fact that the owner of the small dam located on it would have to build a fishway, it was not considered advisable to incur any expenditure.

8. *LaHave River, Lunenburg County*.—The two fishways in dams on this river immediately above tide water were inspected and found to be effective. Last year the fishway in the second dam was blocked by the logging operations and notice was served that such would not be permitted in future unless an adequate fishway were provided.

As the main LaHave is obstructed by a falls and two dams below New Germany, the falls being practically insurmountable, it was decided to direct attention to the north branch which enters the main river below these falls. The following obstructions on this branch were inspected and information obtained whereby fishways could be built, viz:—

- (a) Dam owned by Fred DeLong.
- (b) Dam owned by Messrs. Rhuben Keddy, Wm. Caldwell, Daniel Veniot, Rufus Feindel and Amos Ernst.
- (c) Indian Falls, a natural falls the total height of which is about 20 feet.
- (d) Dam owned by Hulbert Millbury.

9. *East River, Lunenburg County*.—Falls or rapids on this river which prevented ascent of salmon, except during high water, were inspected. Work which included blasting to confine the flow of water into a narrow defined channel was done at a cost of \$115.51.

The fishway in the Chester Light and Power Company's dam on this river was inspected and directions given the manager for certain modifications to make it more effective.

10. *Martin River, Lunenburg County*.—Obstructions to the ascent of salmon into lake Spondo were removed, including the improvement of the channel at the site of an old dam at a cost of \$188.16.

11. *Benery Brook, Halifax County*.—Obstructions consisting of jams of logs and debris were removed at a cost of \$50.

12. *Sackville River, Halifax County*.—Improvements of the passage for salmon through an old abandoned dam were made at a cost of \$5.

13. *White Lake, Halifax County*.—Arrangements were made to build a fishway in the dam at the outlet of this lake, but owing to high water the work was not completed.

14. *Gays River, Halifax County*.—Investigation of the necessity for a fishway in Cook's dam on this river was continued. Evidence so far obtained indicates that no good purpose would be served by requiring its construction.

15. *Tangier River, Halifax County*.—Repairs to the fishway in the Tangier Gold Mining Company's dam, which included putting in a new type of partitions, were completed. As this involved alterations to an existing fishway the work was done by the department under subsection 4 of section 31 of the Fisheries Act at a cost of \$91.76.

16. *Newcombe Brook, Halifax County*.—An unused dam owned by George Monk was inspected. Owing to its condition the construction of a fishway was not feasible, but the owner was notified to provide an opening in the gate to permit the passage of fish.

17. *Ship Harbour River, Halifax County*.—Fishway in the John Lewis Company's dam was inspected and directions for certain repairs given to the manager of the company.



18. *Liscomb River, Guysboro County*.—Representations having been made that a passage for fish should be provided at the dam on this river owned by the Goldenville Mining Company, an inspection of the condition at that location was made. Owing to the fact that an impassable falls, the construction of a fishway through which is practically impossible, exists immediately below this dam, it was not considered that any action to require the owners of the dam to provide a fishway therein was necessary.

19. *St. Mary's River, East Branch, Guysboro County*.—A dam being built by the Sonora Lumber Company at Fisher's Mills was inspected and plans for a fishway furnished to the company.

20. *Salmon River, Guysboro County*.—Dam owned by John McPherson on this river was inspected and information for the reconstruction of the fishway, which together with a portion of the dam had been destroyed by heavy ice, given the owner. As the reconstruction involved alterations to the original design one-half the cost of the new fishway was paid for by the department, under subsection 4 of section 31 of the Fisheries Act, amounting to \$100.

21. *Benacadie River, Cape Breton County*.—Inspection of obstructions which included diversions of the main channel and accumulations of debris was made and remedial work carried out at a cost of \$149.95.

22. *McIntosh Brook, Cape Breton County*.—Inspection of obstructions was made. This stream was so seriously obstructed for a distance of some two hundred yards that it was considered advisable to open up an entirely new channel. Remedial work was completed at a cost of \$200.

23. *Cochrane's Brook, Cape Breton County*.—Obstructions extending over about a mile of this stream and consisting of jams of old logs and debris were inspected and the removal of the same effected at a cost of \$100.

24. *Black Brook, Cape Breton County*.—A channel was blasted through a ledge of flat rock across the river to confine the water to a deeper and more defined stream so as to permit the passage of fish at a cost of \$30.

25. *North River, Victoria County*.—An inspection of a falls on this river was made and directions given for blasting out a passage through them so as to permit the ascent of salmon. The work was completed at a cost of \$298.91.

26. *Hatchery Brook, Inverness County*.—Obstructions to the ascent of fish consisting of jams of old logs, roots and debris were removed at a cost of \$89.

27. *River Inhabitants, Inverness County*.—This river was obstructed at three points by jams of old logs, roots and debris which had accumulated during freshets. The removal of all obstructions was effected at a cost of \$135.75.

28. *O'Law Brook, Inverness County*.—Obstructions consisting of old log and debris forming a jam were removed at a cost of \$24.90.

29. *Prairie Brook, Inverness County*.—The removal of an obstruction to ascending fish, consisting of old logs, roots and debris, was removed at a cost of \$49.50.

30. *Shinimecas River, Cumberland County*.—A dam about three miles from the mouth of this river was inspected and information for the design of a fishway obtained. Owing to the fact that several miles of this river above the dam did not show any evidence of being suitable for spawning grounds it was decided to defer action on the fishway pending a more comprehensive examination of the upper waters.

31. *Maccan River, Cumberland County*.—A dam on the upper waters of this river was inspected. Owing to its rather unstable condition it was not con-

sidered feasible to build a fishway without seriously endangering it. As there are several miles of good spawning grounds in this river below the dam as well as two or three good tributary streams coming in, it was not considered advisable to have the fishway built.

32. *River Philip, Cumberland County*.—Fishway at Oxford Light and Power Company's dam was inspected and instructions issued for a slight modification to make it more effective. A heavy wire screen was placed over the fishway to prevent poaching. Rocks were placed in the tailrace and waste-gate channels where poaching is most difficult to control and accumulations of debris cleared away. The cost of work was \$128.71.

33. *Gaspereau River, Kings County*.—The fishway in the power dam was inspected and found effective.

34. *Nictaux River, Annapolis County*.—

- (a) As large numbers of salmon were retarded below Nictaux falls in this river during low water, channels were blasted and concrete wings built to provide a passage at a cost of \$464.67.
- (b) The fishway in the town of Middleton's electric power dam was inspected and instructions issued for certain modifications to make it more effective.
- (c) The control dam owned by the town of Middleton was inspected. Gates in this dam were kept open and there is no necessity for a fishway while the present arrangement is maintained.

35. *Annapolis River, Annapolis County*.—The dam on this river at Lawrencetown was inspected and the fishway found to be effective.

36. *Salmon River, Digby County*.—Obstructions to the ascent of salmon consisting of jams of old logs and debris were inspected. The removal of these obstructions was effected at a cost of \$56.25.

37. *Milton Pond, Yarmouth County*.—The fishway was inspected and instructions issued for certain alterations to the lower end thereof to make it more effective, which were completed at a cost of \$19.53.

#### NEW BRUNSWICK

1. *Wheaton Lake, Charlotte County*.—A screen to prevent the escape of bass into the outlet stream of this lake has been maintained for some years. Repairs and renewals were made during the season at a cost of \$47.40.

2. *Magaguadavic River, Charlotte County*.—

- (a) A complete instrumental survey was conducted of the falls at the mouth of this river for the purpose of designing a fishway to admit the passage of salmon, at a cost of \$61.39.
- (b) An inspection was made at the second falls and information for improvement of the passage for salmon obtained.

3. *Pocologan River, Charlotte County*.—An inspection of obstructions which retarded the ascent of salmon, thus leading to poaching, was made and work to remove such obstructions, together with the clearing of brush at several places adjacent to the river, was completed for \$392.85.

4. *New River, Charlotte County*.—Inspection of this river was made and no obstructions found with the exception of one old dam through which there was a small opening. Instructions were given to have this opening enlarged.

5. *Musquash River, St. John County*.—An inspection was made at the dams of the New Brunswick Hydro-Electric Commission dams on the east and west



branches. Owing to the conditions created by the development of the power, it was not considered feasible to install fishways.

6. *Black River, St. John County.*—An inspection of conditions for the ascent of salmon in this river was made. Arrangements were completed for having some blasting done to improve the channel at one point, but owing to high water occurring at the only time when the services of the Departmental Foreman were available, the work was not completed.

7. *Nashwaak River, York County.*—The construction of a concrete wing in the river immediately below the dam on the Nashwaak Pulp and Paper Company, Limited, in order to improve the channel for the passage of salmon into the fishway was completed at a cost of \$55.66.

8. *Nashwaaksis River, York County.*—Inspected a dam on this river owned by the Hawkins Lumber Company. Owing to the unimportance of the stream it was not considered that the owner should be required to install a fishway.

9. *Tobique River, Victoria County.*—

- (a) Inspected Fraser Companies' dam at Plaster rock and found fishway to be in good condition and effective.
- (b) Consulted with Mr. Donald Fraser regarding the company's proposal to build a dam at Red rapids. Nothing definite had been decided upon for that season, and Mr. Fraser stated that it was now quite possible that the dam would not be built.
- (c) As representations had been made regarding the condition of the river at Riley's brook, and the department urged to do some work, an inspection of the location was made. It was ascertained that the principal concern of those making the representations was that freshets were changing the gravel bars in the river, thus spoiling some of the angling pools. As there was no evidence that the passage of salmon was in any way impeded, action to meet the wishes of those interested was not recommended.

10. *Salmon River, Victoria County.*—An inspection of the fishway completed in Joseph Cote's dam on this river in 1924 was made. It was found to be in good condition and effective.

11. *Meduxnekeag River, Carleton County.*—An inspection of the dam at the mouth of this river was made and a survey conducted for the construction of a fishway therein. A notice was later served on the owners of the dam to construct the fishway.

12. *Nepisiquit River, Gloucester County.*—Representations having been made to the department that a dam on this river, owned by the Bathurst Lumber Company, was proving a deterrent to the passage of salmon an inspection was made and in consultation with the officials of the company advice was given for the improvement of this condition. The company agreed to have the necessary alterations to its dam made.

13. *Madawaska County.*—As the Madawaska Fish and Game Protective Association had requested that the department cause fishways to be built in a number of dams in that county, a meeting of that association was addressed, pointing out that owing to the location of all the rivers in question above Grand falls on the St. John river, nothing would be gained by installing fishways as no migratory fish could return to them owing to the falls.

#### PRINCE EDWARD ISLAND

Fishways in dams on Prince Edward Island to permit the ascent of sea trout, and in some cases salmon, to the upper waters of the rivers have been persistently urged for several years. There are no crown lands on the island



and all mill ponds and streams are on privately-owned lands. It would accordingly be within the rights of the owners to either lease the fishing privileges or to restrict them to such extent as they might desire. Moreover, all the dams on the larger streams have been in existence for a great number of years and in no instance was it found that the present owner was the original one. There had never previously been any fishways in dams on the island and the present owners had acquired the properties without knowledge of the requirements regarding them. As it did not appear equitable to require the present owners of the dams to build fishways therein at their own expense, the department adopted the policy that it would build and maintain them in dams on desirable streams after such had been approved, on the condition that a proper understanding was procured in each instance that the public would be allowed so long as the fishway was maintained by the department, to fish in the streams, subject to the regulations of the department.

Under this policy the following fishways were built in 1925:—

1. *New Glasgow River, Queens County.*—Fishway in the New Glasgow Rolling Mills' dam, at a cost of \$272.87.

2. *Vernon River, Queens County.*—Fishway in the Ross dam, at a cost of \$314.39.

3. *Desable River, Queens County.*—Fishway in the Dickson dam, at a cost of \$362.49.

4. *Morell River, Kings County.*—Fishway in Laird's dam, at a cost of \$368.80.

It is pleasing to note that the effectiveness of these fishways was definitely ascertained in two instances immediately after completion, sea trout being seen to pass through them in some numbers as soon as they were opened up.

5. *Dunk River, Prince County.*—An inspection of a dam on this river was made, but owing to extensive repairs being made on the dam it was not considered advisable to proceed with the construction of a fishway until a later time.

6. *Montague River, Kings County.*—An inspection of the Montague Electric Light Company's dam was made and information for the design of a fishway obtained.

#### MANITOBA

No fishways were built in this province during the year.

#### SASKATCHEWAN

1. *Cowan River.*—Plans for the construction of a fishway in a dam on this river were made and submitted to the Department of Public Works, which has supervision over the dam.

#### ALBERTA

1. *Waskatenan Creek.*—The Canadian National Railways completed a fishway in its dam on this creek under the direction of the department.

2. *Pipestone Creek.*—Arrangements were made with the Canadian Pacific Railway to build a fishway in its dam on this creek.

3. *Oldman River.*—A thorough investigation regarding the need for a fishway in the dam at the headworks of the Lethbridge Northern Irrigation District was conducted. As a result of information obtained, it was decided not to require this fishway. The question of providing screens was also fully investigated and decided against as no practical scheme for maintaining them could be devised.

#### GENERAL

Periodical inspections were maintained by each fishery overseer of the fishways in his subdistrict, throughout the open water season.

## BRITISH COLUMBIA—REPORT OF J. McHUGH, RESIDENT ENGINEER

Major obstructions to the ascent of fish were removed from the following streams during the calendar year of 1925, the amounts expended in each case being bracketed with the name of the stream:—

(1) Yakoun river, (Queen Charlotte islands).....	\$ 610 25
(2) Birkenhead river, (Mainland).....	487 98
(3) Demanuel creek (Vancouver island).....	454 76
(4) Dean river (Mainland).....	432 83
(5) Stamp falls (Vancouver island).....	405 32
(6) Kwaye river (mainland).....	300 00
(7) Atnarko river (mainland).....	263 95

1. *Yakoun River, Queen Charlotte Islands.*—The expenditure on this stream was necessary for the purpose of clearing away an accumulation of debris from the mouth thereof and for a distance of five or six miles along its course, such debris having accumulated since the heavy expenditure some two or three years ago. As was pointed out in the detailed report concerning obstructions on this stream, there should not, in the ordinary course of events, be any necessity for further large expenditures here, if a certain amount of labour be performed by the men on patrol at Masset inlet during the season, or at the close thereof, and arrangements were made, whilst on the ground, by the supplying of an outfit of tools for this purpose, to have this work done by the resident officer from year to year. It is further noted in this detailed report that the most impassable log jams become loosened and disintegrated during certain freshet periods and heavy expenditure might be, at times, avoided when necessity for immediate clearance is not paramount. Pink salmon in enormous numbers frequent this stream.

(2) *Birkenhead River, Mainland.*—Work on this river was more in the nature of protection work to prevent further erosion of a portion of the banks, thereby depositing additional log refuse in the stream and at the same time endangering the stability of the Pemberton hatchery, which is located on the banks of the river in this vicinity. This work consisted of excavating a dry channel in the bed of the stream, opposite the bank where additional scour was feared, and the construction of crib work protection along this bank. The results have been quite favourable, although it was not, at the time, possible to excavate the new channel to the depth desired owing to a rapid rise in the river. This condition is being taken care of during the present calendar year, at low water season. Sockeye salmon in particular frequent this stream.

(3) *Demanuel Creek, Vancouver Island.*—Work on this creek consisted of the removal of a huge log jam, 14 yards wide by 150 yards long, and 10 feet or more in depth in places, which was all cut, piled, and completely and successfully burned clear. Cohoe salmon and steelhead frequent this stream in large numbers.

(4) *Dean River, Mainland.*—The work on this stream consisted of the construction of a by-pass about 40 feet in length around a fall in the bed of the stream which at high water created conditions of great difficulty. It is confidently hoped that as a result of the work performed, salmon will be able to pass this fall without undue delay in future.

(5) *Stamp Falls, Vancouver Island.*—The work on Stamp falls was performed in an endeavour to remove certain protruding rocks from the crest of the main falls, and the excavating of a series of pockets in the rock on the extreme right bank for the purpose of assisting the ascent of fall salmon into Great Central lake. Some years ago, surveys were made and estimates prepared for the construction of a fishway around these falls, that would safely take care of all varieties of salmon entering Great Central lake, but owing to the heavy



cost of the proposal, and the desire of the Provincial Government that the development of the water-power on Stamp falls should not be hindered by any restricting fishery regulations, the work was never proceeded with. The work done this year was for the purpose of temporarily alleviating a condition of extreme gravity when large numbers of fish were observed dying around Stamp falls. Efforts made were successful as far as the passage of the coho and steel-head are concerned, but it cannot be hoped that sockeye salmon can ever reach Great Central lake until the larger and more comprehensive scheme is executed, and it is not likely that the objections to this, which have been registered by the Provincial Government, will ever be removed.

(6) *Kwaye River, Mainland.*—The work done on this stream was mainly occasioned by the extremely dry season, which did not give ascending fish a chance to take full advantage of the work that was done in previous year. Owing to the fact that enormous numbers of salmon were observed to be dying as a consequence of their inability to ascend, a channel was excavated in a suitable place around the falls, which enables the salmon to pass by. This stream is noted for the exceedingly heavy run of pink salmon.

(7) *Atnarko River, Mainland.*—The work on the Atnarko river consisted of the removal of the various log jams which from time to time accumulate in this stream after the annual freshets, and which are removed each year after they have formed, by the overseer for the district and such men as he can conveniently arrange to take in with him. All this work has been done in the interests of the various species of salmon which frequent this stream.

In addition to these larger expenditures, other small obstructions, costing as shown, were removed from the following streams, for the purpose of assisting the salmon to their spawning grounds:—

Granite bay.....	\$ 25 40
Crawford creek.....	95 00
Kimsquit river.....	164 52
Skutz falls.....	27 10
Salmon river (Kamloops).....	136 10
Capilano river.....	30 75
Bridge river.....	40 35
Camp river.....	133 50
Hells gate.....	20 20
Louis creek.....	13 12
Mann creek.....	35 13
Sweltzer creek.....	121 75
Englishmans river.....	85 48
Hyas creek.....	87 55
Deep Bay cove creek.....	131 75
Sucker creek.....	10 00
Quatsi river.....	54 00
Lardo river.....	42 20
General account.....	1 50

The entire list of obstructions removed during the year under review comprises twenty-five separate pieces of work, scattered through the length and breadth of the province, each requiring its own particular inspection and treatment.

There has been no fishway construction during the year, neither have any reports appeared pointing to defects in any of the existing fishways in the province.

The sum of approximately \$3,000 was expended on the creek which supplies water to the Rivers Inlet hatchery, Medowse creek, which during the fall months, when in freshet, tore away banks, undermined the hatchery and partially assisted in demolishing the boat house, and washed away a portion of the pipe line. It was necessary to redirect the water of the stream back to its own channel and to reinforce the banks of the creek with rock and brush in order that the buildings might not further be endangered. In addition to this the sum of \$1,200 was spent on repairs and renewals to the wharf and boathouse,



\$200 for repairs to the hatchery foundations, and approximately \$500 for repairs to the pipe line. This stream will always be difficult to maintain on account of the extreme violence of its freshets, and a certain amount of protection work will be necessary every year in order to protect the buildings which are in use at this point.

During the months of June and July extensive repairs to the walls and foundations of the Babine Lake hatchery were performed, costing approximately \$1,500. The Babine Lake hatchery is an old log building, constructed almost twenty years ago. Owing to decay the foundations had become impaired, and the walls of the building were bulging badly. Very satisfactory repairs, however, were performed on the building, new logs being introduced in places, and it is now in shape for many additional years of service.

During the months of August and September the old hatchery establishment at Cultus Lake, which had outlived its usefulness as a temporary structure, was torn down and a new hatchery and dwelling house for the men constructed on the same ground. The hatchery itself consists of a frame building measuring 34 feet by 56 feet, containing thirty-nine troughs and having a capacity of 5,000,000 sockeye eggs. The hatchery is of frame construction, 2 by 6 studs, unlined inside, covered with shiplap, tar paper and cedar siding on the outside, and rests on an 8-inch concrete wall, stretching clear around the building. The floor consists of the original dirt floor, having a 2-foot passage in between the rows of troughs, laid with duck boards in convenient sections for handling and removal. All troughs are new, together with their trestles, outlets and head tank. The roof is supported on four timber trusses, consisting of 6-inch by 8-inch tie beams, 4-inch by 6-inch principals, 4-inch by 4-inch purlins, 4-inch by 4-inch struts and 1½-inch truss rods. These trusses are spaced evenly throughout the building, which is lighted by eight 50-candle power lamps suspended from the tie beams on counterweights, the current for same being procured from a Belco lighting system operated by the Chilliwack Parks Board close by. The total cost of this building, including all its equipment, light and power line, painting, etc., was considerably under \$3,000.

The men's quarters consists of a frame house measuring 28 feet by 26 feet, and provides a combined living and dining room, two bedrooms, each with a clothes cupboard, a good-sized kitchen and bathroom. The house is plastered inside and provided with full plumbing services, hot and cold running water in bathroom and kitchen, fully wired and lighted by electricity and heated by a large heater in the living room. The place is extremely comfortable, and cost slightly under \$1,600.

In addition to this work, many inspections were made by the engineering staff during the year, including the Kimsquit and Dean river obstructions, Bridge River rapids, Granite creek, Valdez island, Prospect lake and Fraser River canyon, together with the inspections incidental to the removal of obstructions in the various streams.

The construction of the Cariboo road, Fraser River canyon highway, through the Fraser canyon in the vicinity of Hells gate and China bar, has necessitated conferences with the Provincial Government and various inspections for the purpose of assisting in minimizing, as far as possible, possibilities of further damage to the Fraser river in this vicinity, incidental to the highway construction.

Finished plans were prepared for the proposed new sheds at Digby island and work was completed on the warehouse and marine ways at Poplar island, Fraser river. It was necessary to give much time to the work of the Biological Board during the year, and several visits were paid to the biological station at Departure Bay for conferences with the director of that station. In collaboration with the Provincial Government plans were prepared for the proposed Biological Station at Prince Rupert, which, owing to certain unfortunate circum-

stances in connection with the location, was not commenced during the year. It is hoped, however, to have this establishment completed during the early part of the year 1926.

A new seven-room bungalow was constructed for the Director of the Biological Station, Nanaimo, B.C., at a cost of \$5,250, and a new five-room bungalow for the use of the Biological Board at Cultus Lake was constructed at a cost of \$3,500. Both of these buildings were constructed under contract, and excellent value was received from the contractors in each case. Plans and specifications for both of these works were prepared in this branch of the department, which likewise provided the necessary supervision during construction.

Construction was also commenced on a fence, approximately 170 feet long and 14 feet wide, across the bed of Sweltzer creek, which drains Cultus lake into the Vedder river. This fence is being constructed for the purpose of endeavouring to obtain an exact count of the number of sockeye yearlings and fry which migrate from Cultus lake in the spring. This is a work required by the Biological Board in the course of its investigations, and plans for the fence were completed in this office in collaboration with both Drs. Clemens and Foerster, of the Biological Board staff. The fence consists of a platform of 2-inch planks, 14 feet wide, laid on sills at suitable intervals which in turn rest on piles driven into the bed of the stream, both up and down stream faces being sheet piled with 2 by 6 tongued and grooved sheet piling to prevent scour and undermining. On this platform are to be erected panels of heavy closely woven wire, which will divert migrating fry into six counting pots, each 10 feet by 8 feet, which have been constructed on an extension of the aforesaid platform. The wire screens will consist of moveable panels each 10 feet in length, moving in slides like window sash. Each panel is in duplicate, so that when one clogs its counterpart can be lowered into place while the clogged screen is lifted and cleaned. Fry will be diverted by this fence into the counting pots, which are to be fitted with a device permitting regular exit and counting. All the work necessary on this fence was completed during the fall months while the water was at its lowest ebb. The wire screens will be inserted early in 1926, when the first trial count will be made. The numbers of parent sockeye salmon entering Cultus lake last fall were carefully counted, and if the operation of the fence proves to be successful, much valuable data will be procured.

In addition to the foregoing the large scale maps have been kept up to date and a considerable amount of new material added to them as a result of the various investigations and inspections made by officers of the department from time to time during the year.

## APPENDIX 5

## FISHERIES

## FINANCIAL STATEMENT 1925-26

Vote No.	Service	Appropriation	Expenditure
239	Salaries and disbursements, F.O., Fisheries Patrol Service, Fisheries Protection Service.....	880,000 00	789,870 14
240	Building fishways, etc.....	30,000 00	9,523 58
241	Legal and incidental expenses.....	2,000 00	1,995 62
242	Conservation and development of deep-sea fisheries.....	95,000 00	70,145 40
243	Fisheries Intelligence Bureau.....	2,000 00	423 24
244	Inspection of canned and pickled fish.....	25,000 00	23,002 67
245	Fish culture.....	370,000 00	342,836 72
246	Investigations.....	10,000 00	9,949 04
247	Marine Biological Board.....	42,000 00	42,000 00
		1,456,000 00	1,289,746 41
24	Civil Government salaries.....	96,500 00	94,431 66
	Contingencies.....	20,000 00	14,487 67
Stat'y.	Fishing bounty.....	160,000 00	159,984 80
		1,732,500 00	1,558,650 54
396	Gratuities.....		250 00
396	Revision of salaries, etc.....		1,285 01
			1,560,165 55







## SUMMARY

Provinces	Inspector's, Overseer's and Ward's		Allowances			Gasolene and Oil	Special Guardians		Sundry	Total
	Salaries	Disb.	Auto	Boat	Horse		Wages	Expenses		
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Nova Scotia.....	64,871 68	11,318 56	11,118 28	1,161 02	300 00	384 02	35,248 82	868 40	297 89	125,568 67
Prince Edward Island.....	11,925 00	2,822 83	1,600 00	300 00		397 60	7,199 34	10 00	471 67	24,726 44
New Brunswick.....	39,337 16	5,942 99	6,800 00	1,841 66	354 00	1,297 69	21,582 65	10 00	713 85	77,880 00
Quebec.....		13 40							265 50	278 90
Manitoba.....	9,400 00	3,743 89		262 50	1,025 00		952 45	1,247 92	52 94	16,684 70
Saskatchewan.....	10,945 00	3,994 31	225 00	150 00	1,000 00		607 50	1,178 45	55 63	18,155 89
Alberta.....	10,300 00	4,538 51	375 00	281 25	750 00		1,075 00	1,362 15	62 81	18,744 72
British Columbia.....	58,835 68	22,230 35					15,779 08	4,670 61	5,486 85	107,002 57
General Account.....		1,526 77							14,165 03	15,691 80
	205,614 52	56,131 61	20,118 28	3,996 43	3,429 00	2,079 31	82,444 84	9,347 53	21,572 17	404,733 69



## DETAILED STATEMENT OF EXPENDITURE—FISHERIES PATROL SERVICE, 1925-1926

Establishments and Accounts	Paylist		Board or Prov'n.		Fuel		Repairs		Supplies			Clothing		Sundry		—		Total	
	\$	cts.	\$	cts.	\$	cts.	Hull	Engine	Engine	Deck	Stewards	\$	cts.	\$	cts.	\$	cts.		
<i>New Scotia—</i>																			
"Mildred McColl"	3,604	83	1 15	1,260	04	281	04	434	45	191	62	74	53	97	79	104	40	6,073 05	
"A"	2,299	40	2 71	447	68	73	16	470	45	122	27	7	72	13	89	64	60	3,554 15	
	5,904	23	3 86	1,707	72	354	20	904	90	313	89	82	25	111	68	169	00	9,607 20	
<i>Prince Edward Island—</i>																			
"Upperhand" (chartered)				216	27					32	98	2	30			650	00	2 30	
"Daisy"				107	07					17	40	8	00	4	22	158	00	902 76	
"Mary Spring"	468	88				74	95			6	29			1	17	763	57	763 57	
"Ostrea"				143	64	30	27	7	60	46	42	19	90	3	85	35	28	82 41	
"Richmond"	1,093	34														1,380	30	1,380 30	
	1,562	22		466	98	105	22	7	60	103	09	30	20	12	75	843	28	3,131 34	
<i>New Brunswick—</i>																			
"Phalarope"	4,380	00		938	36	56	46	146	19	162	50	44	17	86	48	6	64	5,820 80	
"Shannon" (chartered boat)	2,580	00		685	17					29	68	5	78			605	15	3,905 78	
	6,960	00		1,623	53	56	46	146	19	192	18	49	95	86	48	611	79	9,726 58	
<i>Manitoba—</i>																			
"Bradbury"	9,962	66	2,587	80	5,706	23	589	88	114	75	505	09	1,319	56	175	51	813	47	22,251 26
<i>British Columbia—</i>																			
General Account	3,197	19	35	112	25	17	53	283	83	1	50			0	69	687	97	4,364 64	
Poplar Island Warehouse	1,140	00		90	10	18	78	39	99	259	76	233	26	12	55	506	63	2,301 07	
Sapperton Warehouse																0	50	0 50	
<i>Chartered Boats—</i>																			
"Agnes W. Dods"	1,325	22		187	52					30	85					838	85	2,382 44	
"Akashi"	655	73		124	57					26	60					1,065	05	2,071 95	
"Alberta"	100	00																	
"Amy S."	895	8		357	88					59	37			3	12	1,098	00	2,414 25	
"A.N."	200	00		5	20					4	20			2	00	62	00	2,414 25	
"Annie May"	787	50		298	57	72	89	3	50	30	13	356	00	856	00	856	00	2,048 59	
"Aramac"	506	66		103	96					43	25			155	00	155	00	808 87	
"Bedwell"	84	00																84 00	
"Bide-a-wee"	225	81		62	30					13	90			2	00	70	00	374 01	
"Bill"	393	33		9	68					18	25			60	00	272	55	681 90	
"Bluebird"	300	00		52	19					39	10			62	00	432	44	62 00	
"Shore Boy"	709	00		189	97									4	21	728	33	1,670 61	

[illegible]

## DETAILED STATEMENT OF EXPENDITURE, FISHERIES PATROL SERVICE, 1925-1926—Continued

Establishments and Accounts	Paylist \$	Board or Prov'n. \$	Fuel \$	Repairs		Supplies		Clothing \$	Sundry \$	Total	
				Hull \$	Engine \$	Deck \$	Stewards \$			\$	cts.
<i>Departmental Boats—</i>											
"Alina"	695 33		55 93	6 90	44 80				2 50	141 56	
"Babine No. 1"	831 43		96 61	9 07	8 59				92 90	938 15	
"Babine No. 2"			96 61	9 07	15 60				42 90	1,067 57	
"Black Raven"	959 51		301 33	380 35	4,310 03				81 43	6,467 45	
"Bonita"	2,816 40		871 31	378 65	116 50				36 23	4,641 33	
"Cloyah"	2,657 23		601 45	232 28	309 29				567 95	4,638 76	
"Cohoe"	961 96		445 84	192 14	33 98				15 99	1,817 43	
"Egret"	1,500 00		361 46	144 80	241 98				60 28	2,408 64	
"Elk"	3,420 00		335 40	77 30	82 18				17 89	3,997 34	
"Foam"	4,529 17		494 23	65 18	189 96				143 08	5,534 32	
"Gull"	1,550 40		248 96	504 20	289 98				61 27	2,943 05	
"Hawk"	1,571 19		290 14	172 57	50 42				9 35	2,198 15	
"Heron"	1,446 62		476 74	522 01	96 48				37 10	2,784 38	
"Humming Bird"			5 60							8 52	
"Linnett"	1,402 67		580 87	118 10	52 40				56 59	2,316 24	
"Marfish"	5,121 58		2,105 83	492 00	236 27				334 51	10,030 10	
"Merlan"	1,286 79		305 72	150 70	12 00				1,889 23		
"Merrysa"	4,500 00		229 25	856 84	4,904 22				150 25	10,908 91	
"Oyashimo"	1,250 65		148 70						1,226 50	2,642 94	
"Radedis"	2,478 00		290 95	356 08	40 61				497 53	4,174 99	
"Swan"	4,500 00		480 00	59 00	134 35				25 09	5,348 93	
"Vanadis"	6,263 23		498 25	337 91	356 08				591 95	9,742 60	
"Vedder"	3,420 00		232 80	29 01	65 66				13 34	3,882 12	
	83,913 20	2,244 01	16,454 89	5,236 21	11,984 77	3,826 71	1,667 81	263 28	24,734 58	151,824 40	

## SUMMARY

Nova Scotia	5,904 23	3 86	1,707 72	354 20	904 90	313 89	82 25	111 68	169 00		9,607 20
Prince Edward Island	1,562 22		1,466 98	105 22	7 60	103 09	30 20	12 75	843 28		3,131 34
New Brunswick	6,960 00		1,623 53	56 46	146 19	192 18	49 95	86 48	611 79		9,726 58
Manitoba	9,962 66	2,587 80	5,706 23	589 88	114 75	505 09	1,319 56	175 51	813 47		22,251 26
British Columbia	83,913 20	2,244 01	16,454 89	5,236 21	11,984 77	3,826 71	1,667 81	1,498 94	24,734 58		151,824 40
	108,302 31	4,835 67	25,959 35	6,341 97	13,158 21	4,940 96	3,149 77	1,885 36	27,172 12		196,540 78



## DETAILED STATEMENT OF EXPENDITURE, FISHERIES PROTECTION SERVICE, 1925-1926

Establishments and Accounts	Paylist	Board or Prov'n.	Fuel	Repairs		Supplies		Clothing	Sundry	—	Total
				Hull	Engine	Engine	Deck	Stewards			
	\$	cts.	\$	\$	cts.	\$	\$	cts.	\$	cts.	\$
General Account.....									137 94		137 94
<i>East Coast—</i>											
"Arleux", .....	20,185 35	4,701 43	6,650 67	143 63	2,742 91	578 62	510 11	487 26	683 20		38,089 43
"Arras", .....	21,319 69	7,455 25	8,524 35	1,061 41	2,553 73	733 32	641 57	455 36	1,279 95		45,473 29
"Franklin", .....	21 00	394 35						8 75	803 69		1,227 79
	41,526 04	12,551 03	15,184 02	1,205 04	5,296 64	1,311 94	1,151 68	951 37	2,716 84		84,790 51
<i>West Coast—</i>											
"Givenchy", .....	24,958 51	6,006 01	7,672 68	3,736 19	1,070 72	1,009 52	485 21	1,204 98	1,002 81		48,515 35
"Malaspina", .....	29,892 56	7,229 93	9,679 60	1,665 77	646 44	1,252 22	676 20	1,118 23	1,303 91		55,151 87
	54,851 07	13,235 94	17,352 28	5,401 96	1,717 16	2,261 74	1,161 41	2,323 21	2,306 72		103,667 22

## SUMMARY

General Account.....	41,526 04	12,551 03	15,184 02	1,205 04	5,296 64	1,311 94	1,151 68	951 37	137 94		137 94
East Coast.....	41,526 04	12,551 03	15,184 02	1,205 04	5,296 64	1,311 94	1,151 68	951 37	2,716 84		84,790 51
West Coast.....	54,851 07	13,235 94	17,352 28	5,401 96	1,717 16	2,261 74	1,161 41	2,323 21	2,306 72		103,667 22
	96,377 11	25,786 97	32,536 30	6,607 00	7,013 80	3,573 68	2,313 09	3,274 58	5,161 64		188,595 67

## DETAILED STATEMENT OF EXPENDITURE FISH CULTURE 1925-26

Hatcheries	Salaries		Maintenance		Total of Hatchery		Total of Provinces	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.
<i>Nova Scotia</i> .....							30,065	72
Bedford.....	1,440	00	5,526	23	6,966	23		
Lindloff.....			1,240	59	1,240	59		
Margaree.....	4,140	00	2,772	05	6,912	05		
Margaree Pond.....	437	16	3,019	22	3,456	38		
Middleton.....	2,880	00	2,642	82	5,522	82		
Windsor.....	1,500	00	3,579	42	5,079	42		
Truro School.....	72	00	816	23	888	23		
<i>Prince Edward Island</i> .....							4,624	81
Kelly's Pond Hy.....	2,820	00	1,804	81	4,624	81		
<i>New Brunswick</i> .....							50,880	64
Grand Falls.....	2,940	00	4,066	64	7,006	64		
Miramichi.....	3,120	00	3,256	74	6,376	74		
Miramichi Pond.....			2,341	77	2,341	77		
Nepisiquit.....	576	63	1,299	03	1,875	66		
New Mills Pond.....	761	40	3,782	52	4,543	92		
Restigouche.....	3,643	37	1,615	88	5,259	25		
Sparkle.....	564	77	429	41	994	18		
St. John.....	2,820	00	7,493	44	10,313	44		
St. John Pond.....			11,861	75	11,861	75		
Tobique.....			307	29	307	29		
<i>Ontario</i> .....							79,938	10
Collingwood.....	3,120	00	7,240	24	10,360	24		
Kenora.....	3,370	00	8,304	84	11,674	84		
Kingsville.....	4,560	00	5,200	05	9,760	05		
Port Arthur.....	2,895	00	3,330	23	6,225	23		
Sarnia.....	4,020	00	3,965	54	7,985	54		
Southampton.....	3,000	00	10,535	68	13,535	68		
ThurLOW.....	6,000	00	6,587	94	12,587	94		
Warton.....	4,290	00	3,518	58	7,808	58		
<i>Manitoba</i> .....							21,265	04
Dauphin River.....			206	00	206	00		
Dauphin River Spawn Camp.....			1,179	82	1,179	82		
Gull Harbour.....	1,680	00	5,307	82	6,987	82		
Winnipegosis.....	2,940	00	9,951	40	12,891	40		
<i>Saskatchewan</i> .....							6,873	95
Qu'Appelle H.....	2,940	00	3,933	95	6,873	95		
<i>Alberta</i> .....							7,655	91
Banff.....	3,015	00	3,246	54	6,261	54		
Jasper Park.....			1	55	1	55		
Spray Lakes.....			1,392	82	1,392	82		
<i>British Columbia</i> .....							114,827	77
General Account.....	7,225	16	2,461	56	9,686	72		
Anderson.....	2,325	36	4,962	97	7,288	33		
Babine.....	2,145	92	7,201	07	9,346	99		
Cowichan.....	3,254	03	3,928	57	7,182	60		
Cranbrook Eyeing Station.....	410	32	245	76	656	08		
Cultus.....	443	55	6,619	58	7,063	13		
Fifteen Mile Creek.....			48	00	48	00		
Gerrard.....	362	58	2,094	42	2,457	00		
Harrison.....	3,166	41	1,579	19	4,745	60		
Kennedy.....	1,921	56	5,930	75	7,852	31		
Lloyd's Creek Eyeing Station.....	577	42	1,883	77	2,461	19		
Nelson Eyeing Station.....	1,050	00	1,726	20	2,776	20		
Pemberton.....	5,335	49	8,726	60	14,062	09		
Pitts.....	1,140	00	4,465	43	5,605	43		
Rivers Inlet.....	2,628	29	13,118	02	15,746	31		
Skeena.....	3,746	28	9,426	22	13,172	50		
Stuart.....	1,440	00	3,237	29	4,677	29		
<i>General Account</i> .....	5,910	00	5,840	84	11,750	84	11,750	84

## SUMMARY

Nova Scotia.....	10,469	16	19,596	56	30,065	72
Prince Edward Island.....	2,820	00	1,804	81	4,624	81
New Brunswick.....	14,426	17	36,454	47	50,880	64
Ontario.....	31,255	00	48,683	10	79,938	10
Manitoba.....	4,620	00	16,645	04	21,265	04
Saskatchewan.....	2,940	00	3,933	95	6,873	95
Alberta.....	3,015	00	4,640	91	7,655	91
British Columbia.....	37,172	37	77,655	40	114,827	77
General Account.....	5,910	00	5,840	84	11,750	84
	112,627	70	215,255	08	327,882	78

UNDER BIOLOGICAL BOARD

	Salaries	Other expenditure	—	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
General Account.....		84 63		84 63
Cultus Lake—Biologist.....	2,280 00	1,290 60		3,570 60
Cultus Lake—Counting Experiment, etc.....	1,684 00	2,487 20		4,171 20
Cultus Lake—Bungalow.....		3,525 55		3,525 55
Jasper Park Investigations.....		599 47		599 47
Fresh Water Scheme.....		30 00		30 00
Trout Investigations.....	1,516 45	468 68		1,985 13
Warm Water Survey.....	500 00	487 36		987 36
	5,980 45	8,973 49		14,953 94
Total Fish Culture.....				342,836 72





## APPENDIX 6

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1925

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
Adeline.....	6	2	3	Sell fish, supplies, water.....	cwt. 100
Agua.....	6	3	1	Orders, .....	
Akutan.....	46	10	10	" sell fish.....	2,700
Alaska.....	54	15	12	Sell fish.....	3,440
Albatross.....	40	14	10	Bait, ice, sell fish.....	1,940
Alfonso XIII.....	6	6	1	Supplies, water.....	
Alice.....	7	6	1	" .....	
Alice B.....	13	5	4	Bait, ice, sell fish, supplies, water.....	40
Alki.....	7	2	10	Sell fish.....	560
Alten.....	43	15	12	Orders, sell fish.....	4,280
America.....	25	11	10	Bait, ice, orders, supplies.....	
Andrew H.....	11	20	1	Supplies, water.....	
Anna J.....	22	6	14	Sell fish.....	1,840
Antler.....	22	5	6	Bait, sell fish.....	120
Aloha.....	19	6	8	Supplies.....	
Arcade.....	14	4	12	Bait, ice.....	
Arctic.....	29	7	10	Sell fish.....	2,440
Arrow.....	40	8	11	" .....	2,700
Atlas.....	31	7	10	" .....	2,360
Atlantic.....	25	9	7	" .....	1,180
Attie.....	35	10	7	" .....	2,300
Augusta.....	19	5	13	" .....	2,000
Baldy.....	7	5	2	Repairs, water.....	
Baltic.....	20	4	8	Sell fish.....	960
Barb.....	2	2	2	Shelter, water.....	
Bear.....	31	5	1	Supplies, water.....	
Beaver.....	16	5	1	Bait, ice.....	
Bernice.....	4	2	1	Sell fish.....	40
Bessie.....	8	4	2	Shelter, water.....	
Bessie M.....	10	4	1	" .....	
Betty.....	15	5	4	Sell fish.....	380
Bluebird.....	4	2	1	" .....	20
Bonanza.....	30	5	11	" .....	2,140
Bravo.....	10	3	10	" .....	720
Brisk.....	37	7	11	" .....	2,880
Brothers.....	13	5	11	" .....	1,980
Brownie.....	6	2	1	Supplies.....	
California.....	20	5	8	Bait, ice.....	
Cape Clear.....	13	5	8	" " sell fish.....	240
Caroline.....	4	2	2	Sell fish.....	120
Cascade.....	7	2	1	Bait, ice.....	
Castor.....	6	3	4	Sell fish.....	260
Cedric.....	19	6	6	" .....	1,100
Chancellor.....	14	5	7	Bait, ice, sell fish, supplies, water.....	Nil
Chelsea.....	51	10	8	" " .....	2,160
Chimera.....	9	3	10	" " .....	
Chum.....	6	4	9	Sell fish.....	640
Cohoe.....	4	1	2	Shelter, water.....	
Columbia.....	41	9	9	Bait, ice, sell fish.....	3,440
Commonwealth.....	60	17	7	Sell fish.....	1,980
Condor.....	4	2	1	" .....	20
Constitution.....	39	13	11	" .....	3,780
Cora.....	4	2	11	" .....	450
Corona.....	19	11	10	Bait, ice.....	
Curlew.....	18	5	4	" .....	
Daily.....	26	7	13	Orders, sell fish, supplies, water...	2,640
Dalco.....	4	2	1	Water.....	
Defense.....	20	5	8	Sell fish.....	1,180
Democrat.....	27	6	11	" .....	2,500
Diamond T.....	8	1	1	" .....	40
Discovery.....	10	4	7	Bait, ice.....	
Dora H.....	15	5	1	" .....	
Eagle.....	67	16	10	Sell fish.....	5,480

LIST of United States Fishing Vessels which entered Canadian Ports on the  
Pacific Coast during the year ended December 31, 1925—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
Eastern Point.....	4	3	13	"	cwt.
Edco.....	8	6	2	Shelter, water.....	640
Eidsvoid.....	15	5	6	Ice, sell fish.....	440
Eleanora.....	16	5	1	Bait, ice.....	
Ellen K.....	5	1	1	Shelter, water.....	
Emblem.....	4	3	5	Sell fish.....	200
E. Neilson.....	15	4	10	"	940
Enterprise.....	8	3	10	Bait, ice.....	
Eureka.....	11	4	11	" " sell fish, supplies, water..	1,160
Evolution.....	17	5	8	" " supplies, water.....	
Fairway.....	19	5	9	" " sell fish, supplies, water..	700
Faith.....	7	3	13	" " ".....	140
F. C. Hergert.....	21	8	3	" " ".....	
Far West.....	37	5	1	Supplies.....	
Fidelity.....	29	11	1	Water.....	
Flamingo.....	13	5	2	Orders, water.....	
Flattery.....	10	2	9	Sell fish.....	540
Flower.....	3	1	1	Water.....	
Ford.....	4	2	4	Sell fish.....	220
Foremost.....	66	15	10	"	4,660
Fortuna.....	21	5	2	Bait, ice, supplies.....	
Forward.....	18	5	12	" " sell fish.....	1,060
Galveston.....	21	6	4	Sell fish.....	640
Giant II.....	40	5	3	Ice, buying fish.....	
Glacier.....	12	4	13	Sell fish.....	1,760
Gladstone.....	23	6	5	"	780
Gladys.....	11	3	12	" " supplies, water.....	1,020
Gony.....	12	5	3	" " , water.....	60
Grayling.....	16	5	5	"	660
Gretchen.....	7	3	3	Bait, ice.....	
Groth.....	10	4	3	" " sell fish.....	20
Hanna.....	11	5	1	" " ".....	
Happy.....	12	4	5	Sell fish.....	560
Harding.....	19	5	7	Bait, ice, sell fish.....	120
Havana.....	41	15	15	" " ".....	760
Hazel.....	7	3	2	Sell fish.....	120
Hazel H.....	24	5	11	"	1,560
Helen Payne.....	9	2	2	"	100
Helgeland.....	56	15	2	"	480
Hilda.....	10	3	11	"	1,040
Hi Gill.....	12	4	8	"	640
Imperial.....	35	5	9	"	1,160
Inger.....	7	2	7	"	300
Ithona.....	20	5	12	Bait, sell fish.....	1,640
Ivanhoe.....	27	6	9	Sell fish.....	2,400
Jennie F. Decker.....	16	5	14	Bait, ice, supplies.....	
Joseph George.....	6	2	1	In distress.....	
J. P. Todd II.....	12	5	9	Sell fish.....	1,040
June.....	15	5	8	"	860
K. 410.....	5	2	1	Shelter, water.....	
K. 702.....	5	2	2	" " ".....	
K. 874.....	5	2	1	" " ".....	
Kanaga.....	47	9	9	Sell fish.....	2,000
Kanatak.....	39	17	7	"	1,680
Katalla.....	16	5	1	"	80
Kennebec.....	4	3	5	"	320
Kodiak.....	38	13	14	Bait, ice, sell fish.....	2,420
L. 532.....	5	2	1	Shelter, water.....	
Lancing.....	16	5	9	Sell fish.....	1,200
La Paloma.....	14	11	8	Bait, ice.....	
Leif II.....	21	3	2	Sell fish.....	780
Lenor.....	14	4	4	"	480
Leviathan.....	29	7	7	"	1,560
Liberty.....	44	15	15	Bait, ice, sell fish.....	880
Lillian M.....	9	3	1	" " ".....	
Lincoln.....	25	6	3	" " sell fish.....	1,640
Lincoln.....	4	3	3	Sell fish.....	200
Lituya.....	39	9	8	"	1,400
Lola.....	4	2	1	"	20
Louise.....	16	5	8	Bait, ice.....	



LIST of United States Fishing Vessels which entered Canadian Ports on the  
Pacific Coast during the year ended December 31, 1925—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Lumnen.....	10	4	9	Sell fish.....	820
M. 2.....	5	1	1	Shelter, water.....	
M. 689.....	4	2	1	Sell fish.....	20
Madeline J.....	25	5	10	Bait, ice.....	
Magnolia.....	25	2	1	Sell fish.....	80
Majestic.....	33	7	12	".....	3,920
Margaret T.....	9	3	1	".....	120
Mariner.....	21	6	10	Orders, sell fish.....	920
Mars.....	9	4	6	Sell fish.....	520
Mary.....	24	5	9	Bait, ice.....	
Mary N.....	4	2	1	Sell fish.....	40
Maude Hazel.....	9	4	1	Shelter, water.....	
May.....	4	2	6	Sell fish.....	300
Mermaid.....	19	5	8	Bait, ice.....	
Merna.....	5	3	1	Shelter, water.....	
Middleton.....	24	6	6	Sell fish.....	1,000
Mildred II.....	31	6	7	Bait, sell fish.....	1,280
Minnie Belva.....	5	2	1	Shelter, water.....	
Myrtle.....	15	5	10	Supplies.....	
Naomi.....	4	2	2	Sell fish.....	120
National.....	20	6	7	Bait, ice, sell fish, supplies, water	800
Neptune.....	43	13	11	" " " " " "	880
Neptune.....	4	1	3	Sell fish.....	120
New England.....	70	28	5	Repairs, sell fish.....	740
Nomad.....	15	4	2	Bait, engine repairs, ice.....	
Norland.....	19	5	1	Sell fish.....	160
Norma.....	6	2	2	".....	120
North.....	27	9	7	".....	2,260
North.....	9	3	10	Bait, ice.....	
Omaney.....	34	12	2	Sell fish.....	560
Onah.....	18	5	16	".....	1,780
Orient.....	48	13	12	Bait, ice, sell fish.....	560
Panama.....	34	13	9	Sell fish.....	2,880
Paragon.....	69	15	7	".....	2,800
Pearl.....	5	1	1	Shelter, water.....	
Pegge.....	4	3	2	Sell fish.....	160
Pelican.....	17	5	6	".....	400
Pershing.....	18	5	1	Bait, ice.....	
Pioneer.....	48	13	9	Sell fish.....	2,520
Pioneer II.....	12	5	2	Engine repairs, water.....	
Pioneer III.....	26	6	10	Bait, ice, sell fish.....	360
Polaris.....	45	14	7	Sell fish.....	2,280
Portlock.....	36	7	7	".....	2,300
Presho.....	14	5	13	Bait, ice.....	
President.....	24	6	4	Sell fish.....	1,040
Prosperity.....	25	6	8	".....	3,600
Pysht.....	24	3	1	Supplies.....	
Radio.....	63	15	8	Sell fish.....	3,240
Rambler.....	10	3	7	".....	420
Ranier.....	39	9	12	Orders, sell fish.....	3,440
Ranier.....	4	3	12	Sell fish.....	820
Reliance I.....	19	5	5	".....	820
Reliance.....	14	5	10	".....	1,200
Reliance.....	11	3	1	".....	40
Reliance.....	7	3	9	" supplies, water.....	380
Relief.....	5	2	1	Shelter, water.....	
Republic.....	51	15	8	Sell fish.....	3,500
Resolute.....	47	10	11	".....	4,400
Restitution.....	24	5	9	Bait, ice, supplies, water.....	
Rival.....	4	3	1	Sell fish.....	80
Roald Amundsen.....	23	6	9	".....	1,800
Rosario.....	16	5	2	Bait, ice.....	
Royal.....	15	5	8	Sell fish.....	1,140
Roosevelt.....	13	5	1	Bait, ice.....	
Sadie K.....	16	5	5	" , engine repairs, ice, sell fish	220
Sarah.....	13	2	1	Shelter, water.....	
Scandia.....	39	17	8	Sell fish.....	4,420
Scout.....	5	2	1	".....	20
Sea Lion.....	6	2	1	Supplies.....	
Senator.....	11	6	9	Orders, sell fish.....	1,940

LIST of United States Fishing Vessels which entered Canadian Ports on the  
Pacific Coast during the year ended December 31, 1925—*Concluded*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Seattle.....	55	15	5	Bait, ice, sell fish.....	1,180
Sentinel.....	21	6	10	Sell fish.....	2,200
Seymour.....	44	15	7	".....	2,240
Sherman.....	18	5	10	".....	1,860
Sirius.....	17	6	10	".....	1,240
Sitka.....	50	15	9	".....	3,020
Star.....	7	3	11	".....	840
Spray.....	25	6	9	Bait, ice, sell fish.....	1,360
Summer.....	34	8	10	Sell fish.....	3,320
Sunbeam.....	5	1	1	In distress.....	
Sunset.....	37	7	9	Sell fish.....	2,760
Sun Wing.....	15	4	1	".....	100
Superior.....	26	6	4	".....	450
Swan.....	9	4	15	".....	840
T. 563.....	4	1	3	Water.....	
T. 690.....	5	3	3	".....	
Tahoma.....	18	7	10	Sell fish.....	1,580
Tatoosh.....	21	6	8	".....	1,560
Teddy J.....	13	3	9	".....	1,140
Terna.....	5	2	1	Shelter, water.....	
Texas.....	16	5	4	Bait, ice orders, sell fish, supplies, water.....	380
Thelma II.....	36	5	6	Bait, ice, supplies, water.....	
Thelma M.....	7	3	1	Sell fish.....	80
Thordenskjold.....	39	13	12	Bait, ice, sell fish.....	1,020
Tillicum.....	21	5	2	".....	40
Topsey D.....	6	5	1	Supplies, water.....	
Trinity.....	41	9	2	Sell fish.....	140
Tyee.....	13	4	4	".....	500
Unimak.....	22	5	18	Bait, ice, sell fish.....	660
Urania.....	27	6	2	Sell fish.....	220
Uranus.....	15	5	16	Bait, ice, sell fish.....	680
Uncle Jim.....	6	10	2	Supplies.....	
Valero.....	6	3	10	Bait, ice, orders.....	
Valid.....	8	3	2	Sell fish.....	140
Valorous.....	21	5	15	"....., supplies, water.....	1,560
Vansee.....	58	15	8	Orders, sell fish.....	3,280
Venus.....	25	7	9	Sell fish.....	2,520
Venus.....	4	2	10	".....	1,180
Vera.....	4	2	1	".....	20
Vermont.....	35	8	1	Supplies, water.....	
Vesta.....	17	5	13	Sell fish.....	1,040
Viking.....	11	4	4	".....	160
Virginia.....	33	5	2	".....	420
Volunteer.....	20	5	2	Bait, sell fish.....	160
Wabash.....	6	3	15	Sell fish.....	920
Wanderlust.....	5	5	1	Shelter, water.....	
Washington.....	15	4	1	Sell fish.....	80
Wave.....	7	3	11	".....	720
Wesley.....	9	3	8	Bait, ice.....	
Western.....	41	7	10	Sell fish.....	2,420
Westford.....	17	5	3	Bait, ice, landed sick man, sell fish	40
Wilson.....	19	8	10	Bait, ice, sell fish, supplies, water	400
Wireless.....	19	5	14	Bait, ice, sell fish.....	320
Wizard.....	49	8	7	Sell fish.....	3,200
Woodrow.....	23	5	8	Bait.....	
Yakutat.....	41	14	13	Bait, ice, orders, sell fish, supplies, water.....	1,320
Yellowstone.....	22	5	14	Sell fish.....	1,520
Young America.....	27	6	2	".....	400
Yukon.....	31	6	7	".....	1,780
Yule.....	9	3	1	Supplies, water.....	
Zenith.....	47	9	8	Sell fish.....	1,520

## APPENDIX 7

The following is a statement of the different kinds of licenses issued by the different inspectors during the 1925-26 season:—

## MAGDALEN ISLANDS, QUEBEC—Inspector S. T. GALLANT

Kind of Licenses—	Number of Licenses Issued
Lobster fishing licenses.....	452
Lobster packing licenses.....	17
Lobster packing extensions—15.....	
Fish cannery licenses.....	1
Certificates under section 63—1.....	
Herring seine licenses.....	24
Herring trap-net licenses.....	23
	<hr/> 517

## PRINCE EDWARD ISLAND—Inspector S. T. GALLANT

Lobster fishing licenses.....	2,319
Lobster packing licenses.....	144 (1 cancelled)
Lobster packing extensions—76.....	
Oyster fishery licenses.....	175
Quahaug fishery licenses.....	Nil
Fish cannery licenses.....	11
Certificates under section 63—6.....	
Reduction works licenses.....	Nil
Trap-net fishing licenses.....	3
Smelt gill-net licenses.....	308
Smelt bag-net licenses.....	284 (1 cancelled)
Receipts books—22.....	
	<hr/> 3,244 (2 cancelled)

## NOVA SCOTIA—DISTRICT No. 1—Inspector A. G. McLEOD

Lobster fishing licenses.....	2,067
Lobster packing licenses.....	47
Lobster packing extensions—31.....	
Oyster fishery licenses.....	90
Fish cannery licenses.....	3
Certificates under section 63—61.....	
Reduction works licenses.....	Nil
Herring weir licenses.....	Nil
Special fishery licenses for trap-nets.....	54
Salmon gill-net or drift-net licenses.....	27
Salmon trap-net, pound-net or weir.....	145
Special angling permits.....	50
Receipt books—5.....	
Lobster pound licenses.....	Nil
Smelt gill-net licenses.....	217
Smelt bag-net licenses.....	40
	<hr/> 2,740

## NOVA SCOTIA—DISTRICT No. 2—Inspector D. H. SUTHERLAND

Lobster fishing licenses.....	2,792 (3 cancelled)
Lobster packing licenses.....	62
Lobster packing extensions—57 (2 cancelled).....	
Oyster fishery licenses.....	134
Shad gill-net or drift-net licenses.....	20
Fish cannery licenses.....	2
Certificates under section 63—107 (2 cancelled).....	
Reduction works licenses.....	2
Seine licenses.....	188
Herring weir licenses.....	18
Trap-net licenses.....	139
Salmon gill-net or drift-net licenses.....	320
Salmon trap-net, pound-net or weir licenses.....	151 (2 cancelled)
Special angling permits.....	48
Receipt books—24 (2 cancelled).....	
Smelt gill-net licenses.....	260
Smelt bag-net licenses.....	242
Scallop fishery licenses.....	8
Lobster pound licenses.....	2
Lobster pound certificates—103.....	
	<hr/> 4,388 (5 cancelled)



## NOVA SCOTIA—DISTRICT No. 3—Inspector H. H. MARSHALL

Kind of Licenses— <i>Continued</i>	Number of Licenses Issued
Lobster fishing licenses.....	3,133
Lobster packing licenses.....	27
Lobster packing extensions—34.....	
Shad gill-net or drift-net licenses.....	2
Fish cannery licenses.....	9
Certificates under section 63—163.....	
Reduction Works licenses.....	1
Herring weir licenses.....	81
Trap-net fishing licenses.....	159
Salmon gill-net or drift-net licenses.....	254 (9 cancelled)
Salmon trap-net, pound-net or weir licenses.....	64
Salmon net permits.....	25 (1 cancelled)
Special angling permits.....	463
Lobster pound licenses.....	7
Receipt books—13.....	
Lobster pound certificates—152 (1 destroyed).....	
Smelt gill-net licenses.....	62
Smelt bag-net licenses.....	37
Scallop fishery licenses.....	225
	<hr/>
	4,549 (10 cancelled)

## NEW BRUNSWICK—DISTRICT No. 3—Inspector H. E. HARRISON

Shad gill-net or drift-net licenses.....	230
Sturgeon fishery licenses.....	10
Whitefish fishery licenses.....	1
Salmon net permits.....	150
Salmon gill-net or drift-net licenses.....	127
Receipt books—7.....	
Smelt gill-net licenses.....	Nil
Smelt bag-net licenses.....	Nil
Bass fishery licenses.....	90
	<hr/>
	608

## NEW BRUNSWICK—DISTRICT No. 1—Inspector J. F. CALDER

Lobster fishing licenses.....	637
Shad gill-net or drift-net licenses.....	46
Fish cannery licenses.....	8
Certificates under section 63—5.....	
Reduction works licenses.....	Nil
Herring weir licenses.....	608 (1 cancelled)
Clam permits.....	112
Salmon gill-net or drift-net licenses.....	81
Herring seine licenses.....	1
Receipts books—112.....	
Smelt gill-net licenses.....	Nil
Smelt bag-net licenses.....	Nil
Scallop fishery licenses.....	39
Lobster pound licenses.....	3
Lobster pound certificates—59.....	
Lease of Dark Harbour.....	
Fishing privileges—1.....	
	<hr/>
	1,535 (1 cancelled)

## NEW BRUNSWICK—DISTRICT No. 2—Inspector A. L. BARRY

Lobster fishing licenses.....	2,211
Lobster packing licenses.....	137
Lobster packing extensions—59.....	
Oyster fishery licenses.....	609
Quahaug fishery licenses.....	128
Shad gill-net or drift-net licenses.....	22
Fish cannery licenses.....	5
Certificates under section 63—209 (1 cancelled).....	
Reduction works licenses.....	Nil
Herring weir licenses.....	2
Salmon net permits.....	34
Gaspereau pound-net or trap-net licenses.....	53
Salmon gill-net or drift-net licenses.....	53
Smelt gill-net licenses.....	144
Smelt bag-net licenses.....	4,896
Scallop fishery licenses.....	Nil
Lobster pound licenses.....	5
Bass fishery licenses.....	63
Lobster pound certificates—173.....	
Receipt books—72.....	
Salmon trap-net, pound-net or weir licenses.....	450
	<hr/>
	8,812

## MANITOBA—Inspector J. B. SKAPTASON

Kind of Licenses—Continued	Number of Licenses Issued
Commercial sturgeon fishery licenses.....	194 (1 cancelled)
Domestic sturgeon fishery licenses.....	103
Special angling permits (non-residents).....	250
Pound-net licenses.....	22
Receipts book—275.....	
Special fishery licenses.....	2,810 (7 cancelled)
Settler's permits.....	971
	<hr/> 4,350 (8 cancelled)

## SASKATCHEWAN—Inspector G. C. MACDONALD

Commercial sturgeon fishery licenses.....	1
Domestic sturgeon fishery licenses.....	8
Special angling permits.....	495 (2 cancelled)
Receipt books—14.....	
Commercial and fisherman's licenses.....	758
Domestic fishery licenses.....	137
Indian and half-breed permits.....	828
	<hr/> 2,227 (2 cancelled)

## ALBERTA—Inspector R. T. RODD

Fish cannery licenses.....	Nil
Special angling permits.....	4,611 (3 cancelled)
Receipt books—589 (2 cancelled).....	
Indian and half-breed permits.....	844
Commercial and fisherman's fishery licenses.....	1,008 (4 cancelled)
Domestic fishery licenses.....	147 (12 cancelled)
	<hr/> 6,610 (19 cancelled)

## BRITISH COLUMBIA

Fish cannery licenses.....	11
Certificates under section 63—Nil.....	
Special angling permits.....	20
Abalone fishery licenses.....	1
Indian permits.....	122
Metal tags.....	1,589
Reduction works licenses.....	20
Crab fishery licenses.....	131 (1 cancelled)
Smelt or sardine fishery licenses.....	51
Sturgeon fishery licenses.....	1
Miscellaneous licenses.....	161
Salmon fishery licenses.....	3,888 (1 cancelled)
Salmon trolling licenses.....	1,807 (4 cancelled)
Salmon trap-net.....	20 (1 cancelled)
Salmon drag-seine licenses.....	38 (1 cancelled)
Salmon purse-seine licenses.....	303
License to Capt. of Salmon (purse or drag) seine boat.....	228 (6 cancelled)
Salmon curing licenses.....	67 (2 cancelled)
Salmon cannery licenses.....	68 (1 cancelled)
Boat licenses.....	218 (1 cancelled)
Fish buyer's licenses.....	62 (1 cancelled)
Grayfish licenses.....	166 (1 cancelled)
License to assistant operator of salmon (purse or drag) seine under license No.....	1,294
License to assistant in a boat used in operating salmon gill-net or drift-net.....	1,067 (4 cancelled)
Cod fishery licenses.....	373 (1 cancelled)
Herring or pilchard gill-net or drift-net.....	31
Herring drag-seine licenses.....	4
Herring purse seine licenses.....	54 (1 cancelled)
(No. 16 Pilchard purse Seine)	
License to Capt. of herring seine boat.....	45
Herring curing licenses.....	31
Whale factory licenses.....	2
Counterfoil of pelagic sealing.....	
Certificates.....	10
	<hr/> 10,294 (26 cancelled)

## YUKON TERRITORY

Special fishery licenses.....	24 (1 cancelled)
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## MODUS VIVENDI LICENSES

Pacific Coast.....	216
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Total.....50,114 (74 cancelled)





DOMINION OF CANADA

SIXTIETH  
ANNUAL REPORT

OF THE

FISHERIES BRANCH

Department of Marine and Fisheries

---

FOR THE YEAR

1926-27



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1927



*To His Excellency the Right Honourable Viscount Willingdon, G.C.S.I.,  
G.C.M.G., G.C.I.E., G.B.E., Governor General and Commander in Chief  
of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of your Excellency and the Parliament of Canada, the Sixtieth Annual Report of the Fisheries Branch of the Department of Marine and Fisheries.

I have the honour to be,

Your Excellency's most obedient servant,

P. J. ARTHUR CARDIN,  
*Minister of Marine and Fisheries.*

DEPARTMENT OF MARINE AND FISHERIES,  
OTTAWA, August, 1927.



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## DEPUTY MINISTER'S REPORT

To the Hon. P. J. A. CARDIN,  
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the Sixtieth Annual Report of the Fisheries Branch of the Department, which is for the fiscal year ended March 31, 1927.

The report deals with the following subjects:—

- Review of the Fisheries of 1926.
- Operation of the Fish Inspection Act.
- The Inspection of Canneries and Canned Fish.
- Fisheries Intelligence Service.
- Fishing Bounty.
- Fish Culture.
- North American Committee on Fisheries Investigation.
- International Fisheries Commission.
- Marine Biological Board.
- Oyster and Scallop Investigations.

Appendices to the report include the following:—

- Report of Inspectors of Fisheries.
- Report on Activities of Marine Biological Board.
- Report on Oyster and Scallop Investigations.
- Fishways and Removal of Obstructions.
- Fisheries Expenditure and Revenue.
- Entries of United States Fishing Vessels.
- Summary of Licenses Issued.

### REVIEW OF THE FISHERIES OF 1926

The production of fish and fish products during the year under review was considerably greater than during 1925, while the marketed value was greater by some \$8,418,502, the value being \$56,360,633. The latter value has only been exceeded twice in the history of the industry, and then during the war years when prices were much higher than at present.

The following table shows the marketed value by provinces, as compared with the years 1925 and 1924:—

	1926	1925	1924
	\$	\$	\$
Nova Scotia.....	12,505,922	10,213,687	8,777,251
New Brunswick.....	5,325,478	4,798,589	5,383,286
Prince Edward Island.....	1,358,934	1,598,119	1,201,772
Quebec.....	3,110,964	3,044,919	2,283,314
Ontario.....	3,152,193	3,436,412	3,557,587
Manitoba.....	2,328,803	1,466,939	1,232,563
Saskatchewan.....	444,288	479,645	482,492
Alberta.....	749,026	458,504	339,107
British Columbia.....	27,367,109	22,414,618	21,257,567
Yukon Territory.....	17,866	15,370	18,773
	56,360,633	47,926,802	44,534,235

The province of Nova Scotia shows an increase in value of over two and a quarter million dollars. The fisheries of this province expanded remarkably during the year, due to increased demands, both in Canada and abroad, especially in the fresh fish industry. During the summer months there was an increase in the catch of over 50,000,000 pounds. Fifteen new vessels were built for the industry during the year.

There were increases in the catch of haddock, pollock, herring, sardines, alewives, smelts and tom cod in the province of New Brunswick, which accounts for the increase in value.

The province of Prince Edward Island recorded a decrease in the value of the fisheries. This was due to lower catches of cod, smelts and lobsters, three of the chief fisheries of the province.

In the province of Quebec the value and production was about the same as in the previous year. Smaller catches of cod and mackerel were offset by slightly higher catches of herring, salmon and lobsters.

The province of Ontario shows a drop in the value with decreases in the production of whitefish, pickerel and pike.

There was a splendid increase in production in the province of Manitoba, practically all kinds of fish being taken in larger quantities. Saskatchewan reports a slight decrease, while in Alberta the production and value were higher.

In the Pacific Division, which comprises the province of British Columbia, there was an increase in the production of salmon, which mainly accounts for an increase of nearly five million dollars in the value of the fisheries of that division.

#### ATLANTIC COAST

*Cod, Haddock, Hake and Pollock.*—The catch of these kinds was 3,425,544 cwts. This is an increase over the catch of 1925 of 553,213 cwts. Each kind shows an increase in the province of Nova Scotia, with cod showing an increase of over 450,000 cwts. The catches of haddock and pollock were greater in New Brunswick, while there were decreases recorded in the other two varieties. Prince Edward Island and Quebec showed decreases in the catch of both cod and hake. Of the total catch there were 439,281 cwts. used fresh (including fresh fillets). This is an increase of 127,923 cwts. over the quantity sold in the same manner in the previous year. There were 151,357 cwts. of smoked (including smoked fillets) prepared, as compared with 103,116 cwts. in 1925.

The Lunenburg banking fleet landed some 372,000 qts. of cod. The fleet during 1926 comprised 92 vessels, which was 12 more than in 1925. The price received for their product was considerably less than for the 1925 catch.

Eleven steam trawlers operated out of Nova Scotian ports during the year.

*Mackerel, Herring and Sardines.*—There were 1,531,399 cwts. of these fish landed, compared with 1,428,155 cwts. during 1925, or an increase of 103,244 cwts.

The catch of herring in Nova Scotia was some 58,000 cwts. greater than the year before. The catch was about the same in Prince Edward Island, while in New Brunswick and Quebec there were increases of 50,000 cwts. and 39,000 cwts. respectively. The quantity of herring smoked was 133,163 cwts., which was an increase of 43,219 cwts.

The catch of mackerel was only 115,487 cwts., compared with 187,661 in 1925. Owing to the condition of the American market, which was practically glutted with these fish, the demand for mackerel was small and, therefore, the fishery was prosecuted only in an indifferent manner.

There were 173,166 barrels of sardines taken, compared with 158,533 barrels during the previous year. These fish were very plentiful but the demand, which



comes mainly from the American canneries, was very limited. Consequently not nearly as many were taken as might have been. The pack of these fish locally was the largest in the history of the industry.

*Other Sea Fish.*—The catch of halibut was 24,823 cwts., which is an increase of 3,000 cwts. over the previous year. There were 12,935 cwts. of swordfish taken, which is nearly three times the quantity taken in 1925. The catch of tom cod was 20,239 cwts. and of flounders 15,798 cwts., both an increase over the previous year.

*Shellfish.*—There were 339,583 cwts. of lobsters taken, which is a slight decrease of 1,255 cwts. The catch and its disposal by provinces, as compared with the same period for the year 1925, was as follows:—

	Catch	Marketed Shell	Canned
	Cwts.	Cwts.	Cases
1926			
Nova Scotia.....	184,316	71,443	56,277
New Brunswick.....	59,611	15,861	24,041
Prince Edward Island.....	66,298	3,153	29,442
Quebec.....	29,358	847	13,759
1925			
Nova Scotia.....	170,698	63,525	53,745
New Brunswick.....	65,894	10,991	27,236
Prince Edward Island.....	78,570	10,272	34,121
Quebec.....	25,676	1,313	12,395

There were 19,898 barrels of oysters taken, compared with 19,960 barrels in 1925.

The quantity of clams and quahaugs dug was 41,417 barrels, which was an increase of 12,958 barrels. Scallops also show an increase, there being some 23,200 barrels taken compared with 17,718 barrels.

*River Spawning Fish.*—There were 52,795 cwts. of salmon taken, which is a slight drop from the previous year.

Some 90,481 cwts. of smelts were taken, compared with 75,457 cwts. in 1925. Of the total catch for 1926 New Brunswick contributed 59,400 cwts., which was an increase of nearly 13,000 cwts.

The catch of alewives again shows a big increase, some 71,479 cwts. being landed while in 1925 there were only 56,781 cwts. The quantity landed in Nova Scotia was less, while in New Brunswick there was a large increase. About half of the catch was salted.

#### INLAND FISHERIES

There was an increase in the catch of whitefish of 3,964 cwts., some 190,-644 cwts. being landed. This is the largest catch of whitefish recorded since the year 1919. Manitoba shows an increase of some 16,000 cwts., and is accounted for largely in Lake Winnipeg where the whitefish were more plentiful than for some years. There were 126,086 cwts. of pickerel, 30,385 cwts. of blue pickerel and 72,520 cwts. of pike taken, compared with 86,877 cwts., 34,453 cwts. and 54,217 cwts. respectively during 1925. Ontario showed a decrease in the catch of all three kinds. Manitoba recorded an increased catch of nearly double the quantity of pickerel and pike taken during 1925. The

catch of pickerel and pike in Saskatchewan was slightly greater, while in Alberta it was considerably greater.

From the Great Lakes' waters in Ontario there were taken 44,122 cwts., of fresh water herring or ciscoes. This is a decrease of 1,433 cwts. from the catch of 1925.

The provinces of Manitoba and Alberta showed substantial increases in production, while the catches in Saskatchewan and Ontario fell off somewhat.

#### PACIFIC COAST

The marketed value of the fisheries shows a large increase over that of the previous year amounting to nearly five million dollars. The increase was chiefly due to the larger pack of salmon with an increase in value of nearly four million dollars. The halibut and pilchard fishery were responsible for the remainder of the increase, although the catch of halibut was slightly less than in the previous season.

*Salmon.*—There were 2,125,555 cwts. landed, compared with 1,873,376 cwts. in 1925 or an increase of 252,179 cwts. The number of cases canned was 2,065,185 compared with 1,720,622 in 1925. The total marketed value of the salmon catch was \$18,776,762 compared with \$14,973,885. The latter value was about two million dollars greater than the value in 1924.

The pack this year was a record one and was due to the increased demand for the fall varieties, viz., pinks and chums. The number of cases of sockeye canned was 336,995 which is an average one. The pack of these fish on the Fraser river was larger than usual owing to a late run occurring during the last of September and the first of October. The pack of cohoes was fair while that of pinks was a record one of 772,992 cases. Likewise the pack of chums, 701,971 cases, was a record one.

*Halibut.*—There were 315,095 cwts. of halibut landed, a decrease of 3,145 cwts. from the catch of 1925. The drop was chiefly in the landings made by American vessels.

*Herring.*—The catch was 1,301,269 cwts. which was a decrease of over 100,000 cwts. from the catch of the previous year. There were dry salted 938,647 cwts. this being the second largest pack on record but still some 144,000 cwts. less than the record.

*Pilchards.*—The catch of these fish was more than treble that of 1925, there being some 969,958 cwts. landed. The great bulk was used in the manufacture of meal and oil. There were 7,948 tons of meal produced and 1,898,721 gallons of oil. The greater part of the oil is shipped to the United States and Great Britain, but the meal is sent chiefly to Japan.

*Whales and Seals.*—Two whaling stations were in operation during the year, both on the Queen Charlotte islands. The number of whales taken was 269.

The number of fur seals taken by Indians under the Pelagic Sealing Treaty was 2,824.

#### INSPECTION OF FISH

The inspection of certain kinds of fish, and the packages in which they are marketed, is carried on under authority of the Fish Inspection Act. The Act makes it necessary for packers to have both fish and barrels in accordance with its requirements and empowers Inspectors to examine such whenever and wherever it is necessary and convenient.

On the Atlantic coast during the year there were inspected 44,685 packages of various kinds containing salted herring, mackerel, alewives and salmon.

There were also inspected 68,648 boxes of smoked herring which were prepared for export. In addition to these 56,146 empty barrels were examined and 1,296 empty pails to ascertain whether they were up to the standard required by the Act before they passed into the hands of the packers.

On the Pacific coast the large and very important trade in dry salted herring between British Columbia and China was supervised by the department's inspectors. Provided the container is of standard size and filled to capacity with fish that are properly cured a certificate to that effect is issued by the inspector to the shipper of each shipment and the inspection system is now so satisfactory to shippers that they would not think of making a shipment without the official certificate. During the year under review 190,365 boxes of dry salted herring, each containing four hundred pounds, were inspected.

Under this system of inspection the quality of the cured articles on both coasts is being rapidly improved. The greatest and probably the most important improvement of all is in the quality and strength of the barrels that are now being made all over the Atlantic coast, which alone would seem to justify the institution of our inspection system.

#### INSPECTION OF CANNERIES AND CANNED FISH

The inspection of fish canneries of all kinds throughout Canada, the raw material to be used therein and the process of canning the product and the labelling and marking of the cans was carried on during the year 1925-26 as previously under the provisions of the Meat and Canned Foods Act. This inspection is carried on by the department's staff of fishery overseers as part of their regular duties. There are between six and seven hundred canneries, large and small, canning fish of various kinds on the Atlantic and Pacific coasts. As a result of the inspection that has been conducted for several years there is a marked improvement not only in the conditions under which canning operations are carried on from the sanitary point of view but in the quality of the canned product as well. Defective buildings and equipment are being constantly rectified and improved at the instigation of the inspecting officers.

#### FISHERIES INTELLIGENCE SERVICE

Under this service there was carried on during the season of 1926:—

1. The collection of monthly statistics of the sea fisheries, and the compilation of such in a summarized form for publication through the press each month.

2. The publication of a quarterly bulletin containing the statistics in detail. The bulletin is distributed to the trade and all directly concerned. The statistics are practically all collected by the regular fishery officers while performing their other duties as such and at very little additional cost.

3. The collection of information concerning supplies of bait day by day along certain stretches of the coast during the spring and summer months. The information is gathered by the officers of the department, who send it by telegram daily to certain ports where it is posted up for information of masters of fishing vessels and those looking for bait.

#### FISHING BOUNTY

Under the authority of "An act to encourage the development of the Sea Fisheries and the Building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the Governor in Council. It is distributed under the name of Fishing Bounty, by the Department of Marine and Fisheries amongst



fishermen, and fishing vessel and boat owners on the Atlantic coast under regulations made from time to time by the Governor in Council.

For the year 1926, payment was made on the following basis:—

To owners of vessels entitled to receive bounty, \$1 per registered ton, payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty, \$7.50 each.

To owners of boats measuring not less than 13 feet keel, \$1 per boat.

To boat fishermen entitled to receive bounty, \$5.60 each.

There were 11,036 bounty claims paid. In the preceding year there were 9,979 bounty claims paid.

The total amount paid was \$159,768.10 allocated as follows:—

To 582 vessels and their crew... \$ 46,340 60

To 10,454 boats and their crew... \$113,427 50

#### FISHING BOUNTY EXPENDITURE FOR 1926-27

County	Boats	Men	Amount	Vessels	Tons	Avg. Tons	Men	Amount	Total Amount
			\$ cts.					\$ cts.	\$ cts.
<i>Nova Scotia</i>									
Annapolis.....	181	286	1,794 50	1	14	14	2	29 00	1,823 50
Antigonish.....	114	164	1,032 40						1,032 40
Cape Breton.....	291	526	3,441 80	29	439	15	118	1,338 00	4,779 80
Cumberland.....	3	4	26 10						26 10
Digby.....	344	562	3,507 60						3,507 60
Guysboro.....	515	826	5,159 50	59	961	16	276	3,039 50	8,199 00
Halifax.....	1,020	1,345	8,580 10	77	1,169	15	324	3,602 50	12,182 60
Inverness.....	250	500	3,061 90	8	107	13	38	394 00	3,455 90
Kings.....	37	60	378 60						378 60
Lunenburg.....	497	580	3,755 50	153	8,060	52	2,056	23,487 30	27,242 80
Pictou.....	20	26	168 40						168 40
Queens.....	174	275	1,714 70	15	262	17	93	964 00	2,678 70
Richmond.....	341	614	3,784 30	9	139	15	34	394 50	4,178 80
Shelburne.....	502	914	5,627 40	18	485	27	145	1,572 50	7,199 90
Victoria.....	257	373	2,348 60	5	73	15	14	179 50	2,528 10
Yarmouth.....	121	280	1,689 70	9	515	57	188	1,935 00	3,624 70
Total.....	4,667	7,335	46,071 10	383	12,224	32	3,288	36,935 80	83,006 90
<i>New Brunswick</i>									
Charlotte.....	269	456	2,840 10						2,840 10
Gloucester.....	277	687	4,167 20	171	2,786	16	759	8,483 40	12,650 60
Kent.....	65	119	732 00	7	76	11	8	136 50	868 50
Northumberland.....									
Restigouche.....	1	3	18 50	3	30	10	9	100 50	119 00
St. John.....	30	38	242 80						242 80
Total.....	642	1,303	8,000 60	181	2,892	16	776	8,720 40	16,721 00
<i>Prince Edward Island</i>									
Kings.....	530	810	5,118 50	1	22	22	1	30 00	5,148 50
Prince.....	500	936	5,986 15	4	55	14	8	119 90	6,106 05
Queens.....	143	303	1,865 00	4	48	12	8	102 00	1,967 00
Total.....	1,173	2,049	12,969 65	9	125	14	17	251 90	13,221 55
<i>Quebec</i>									
Bonaventure.....	596	950	6,043 10	2	23	11	8	83 00	6,126 10
Gaspé.....	2,519	5,028	30,864 15	7	102	74	33	349 50	31,213 65
Saguenay.....	751	1,382	8,509 80						8,509 80
Matane.....	106	153	969 10						969 10
Total.....	3,972	7,513	46,386 15	9	125	14	41	432 50	46,818 65
Grand total..	10,454	18,200	113,427 50	582	15,366	26	4,122	46,340 60	159,768 10

## FISH CULTURE

The more important fresh-water and anadromous food fishes, such as Atlantic salmon in the east, whitefish, salmon trout and pickerel in the interior, and Pacific salmons in the west were given first consideration in the fish cultural operations of the department during the calendar year 1926, but in response to a constantly increasing public demand, greater attention was paid to game fish, and the distribution of game trout was approximately the same as in the previous year which was greater than ever before.

Satisfactory progress was made in the development of the rearing ponds and brood stock of trout at the St. John hatchery, New Brunswick, which produced over two million, six hundred thousand eggs during the year. With the increased demand for assistance from areas that are beginning to feel the need of restocking, the necessity for increased facilities for retaining and feeding fry so as to afford a longer season for distribution is becoming more apparent every year.

The total distribution from all hatcheries was greater by over fourteen and one-half million than it was in 1925. The distributions of sockeye salmon and whitefish were larger by approximately two and one-half and forty-three million respectively, and the distributions of Atlantic salmon, cisco and pickerel were smaller by approximately three, ten and fifteen and one-half million respectively, than they were in the previous year, with minor variations in the other species.

In addition to the distributions that were made from the hatcheries, twenty-five lakes received allotments of fry or older fish from other bodies of water. This work was largely confined to the western provinces where there are many districts that are not readily accessible to existing hatcheries. It involved the capture, and transfer in many instances for a considerable distance, of sixty-eight thousand three hundred and sixty-two fish, comprising nine different species.

The seeding of remote and isolated waters (to which it is not feasible to transfer fry from existing hatcheries) was continued in British Columbia and fifteen million, eight hundred and twenty-four thousand, five hundred sockeye salmon eggs, collected in the Pemberton district below Hell's Gate, and in the Lakelse district (the Lakelse eggs were replaced from Pemberton) were planted in the one-time spawning beds of such important sockeye areas as Stuart, Francois, Bowron, Quesnel, Shuswap and Anderson lakes in the Upper Fraser above Hell's Gate.

Examinations and inspections were made in the different provinces with a view to locating waters where trout eggs might be obtained for hatchery purposes, and with a view to locating sites where the fish cultural service might be advantageously extended by the construction of new establishments in districts that are difficult to cover from existing hatcheries.

As opportunity offered, the general inspection of waters throughout the country, which was initiated a few years ago, was continued by the officers and employees of the fish cultural and fishery services.

The Canadian National Railway, Canadian Pacific Railway, Dominion Atlantic Railway, Fredericton and Grand Lake Coal and Railway Company and the New Brunswick Coal and Railway, Esquimalt and Nanaimo Railway, Kettle Valley Railway and the Pacific Great Eastern Railway continued their assistance and co-operation of the previous year by most generously furnishing free transportation for shipments of game fish and game fish eggs with their attendants. A similar courtesy was recently extended by the Cumber-



land Railway and Coal Company. The extent of this co-operation is indicated by the following summary:—

—	Total mileage on trip passes	Number of passages	Mileage baggage car permit			Number Cases or cans			Number of permits
			Full	Empty	Total	Full	Empty	Total	
C.N.R.....	25,811	249	13,465	16,000	29,465	1,020	986	2,006	228
C.P.R.....	12,827	96	7,438	6,634	14,072	382	358	740	119
F. & G.L.C. & R. Co. & N.B.C. & R.....	90	2	45	45	90	10	10	20	2
P.G.E.....	694	8	347	347	694	4	4	8	8
E. & N.....	1,024	20	473	419	892	57	61	118	17
D.A.R.....	2,509	23	1,255	991	2,246	138	121	259	23
	42,955	398	23,023	24,436	47,459	1,611	1,540	3,151	397

NOTE.—Number of passages refers to transportation one way. A return trip counts as two passages. Number of permits refers to one way passage for cases or cans, either by permit, special authority or free transportation without a permit form.

The department also participated with assortments of hatchery products and equipment in several exhibits for portraying the natural resources of the country. These exhibits were of considerable educational value and attracted great interest.

The transfer of the hatcheries previously operated by this department, to the province of Ontario, which was referred to in the last report, became effective on June 30, 1926, and the permanent staffs employed therein were retired or superannuated under the provisions of the Superannuation Act of 1924.

Most gratifying reports are received from all districts where fish cultural operations are carried on in a systematic way. The return of sockeye to the Fraser river watershed was the largest for many years and the commercial catch exceeded all expectations. A record was attained in the collection of Fraser river sockeye eggs which was eleven million in excess of that of last year and over sixty-three per cent in excess of the collection of 1922, the corresponding year in the four year cycle that obtains in the Fraser. The run to the Pemberton district was considerably larger than that of 1925, and all previous collections of eggs were exceeded with a take of forty-five million. A most unexpected run made its appearance late in October in Adams river, tributary to Big Shuswap lake, and in Little River which connects Big and Little Shuswap lakes. It was conservatively estimated that at least one-half million sockeye salmon spawned in these streams. The local fishery officers kept all the tributaries to these lakes under close observation during the spawning season and their evidence is to the effect that no sockeye spawned in any of the streams in this district except the two above mentioned. Nothing approximating this run of 1926 has been seen in this region since before the Hell's Gate disaster of 1913. A record collection was also made at Rivers Inlet and the streams at the extreme head of Owikeno lake, in which the runs were almost extinct a few years ago, were abundantly seeded. All previous collections of sockeye eggs were also exceeded at Lakelse lake on the Skeena, and conditions generally at the several hatcheries on Vancouver island were most promising.

Up to June 30, 1926, when eight hatcheries were transferred to the province of Ontario, the department operated thirty-two main hatcheries, six subsidiary hatcheries, four salmon retaining ponds, one eyeing station and several egg collecting stations. The output from these establishments during 1926



was seven hundred and twenty-one million, nine hundred and eighty-two thousand, eight hundred and eight, as shown by species in the following statement:—

STATEMENT, BY SPECIES, OF THE FISH AND FISH EGGS DISTRIBUTED FROM THE HATCHERIES DURING THE YEAR ENDED DECEMBER 31, 1926

Species	Green eggs	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and older fish	Total distribution
<i>Salmo salar</i> —Atlantic salmon....		440,000	4,797,780	8,494,800	7,909,616	11	21,642,207
<i>Salmo salar sebago</i> —Landlocked salmon.....		25,250		62,035			87,285
<i>Salmo irideus</i> —Rainbow trout....			342,700	139,917	67,863	763	551,243
<i>Salmo clarkii</i> —Cutthroat trout.....		216,250	655,190	293,750	166,890		1,332,080
<i>Salmo gairdneri</i> —Steelhead salmon.....			222,804				222,804
<i>Salmo gairdneri kamloops</i> —Kamloops trout.....		1,581,000	351,509				1,932,509
<i>Salmo trutta leucomaenis</i> —Loch leven trout.....			336,000	210,000		714	546,714
<i>Salmo fario</i> —Brown trout.....				164,295	46,919		211,214
<i>Oncorhynchus nerka</i> —Sockeye salmon.....	1,500	39,423,400	57,305,668		5,029,361	3,854	101,763,783
<i>Oncorhynchus tshawytscha</i> —Spring salmon.....			463,800		221,527		685,327
<i>Oncorhynchus kisutch</i> —Coho salmon.....		793,170					793,170
<i>Oncorhynchus gorbuscha</i> —Pink salmon.....					25		25
<i>Oncorhynchus keta</i> —Chum salmon.....						40	40
<i>Salvelinus fontinalis</i> —Speckled trout.....		535,250	417,127	578,500	2,548,226	3,849	4,132,952
<i>Coregonus clupeaformis</i> —Whitefish.....			478,521,750				478,521,750
<i>Cristivomer namaycush</i> —Salmon trout.....			11,183,290	1,580,000	5,399,415		18,162,705
<i>Argyrosomus arcti</i> —Cisco.....			1,362,000				1,362,000
<i>Stizostedion vitreum</i> —Pickerel.....		1,380,000	88,655,000				90,035,000
	1,500	44,444,320	644,614,618	11,523,297	21,389,842	9,231	721,982,808

Full particulars regarding the extent and scope of this service appear in the Annual Report on Fish Culture for 1926.

#### NORTH AMERICAN COMMITTEE ON FISHERY INVESTIGATIONS

Meetings have been held as follows: On July 9, 1926, at St. John's, Newfoundland, and on April 28, 1927, at Washington, D.C.

The fisheries statistics of the various countries fishing the banks of the northwestern Atlantic are being correlated, so as to make it possible to follow the full fishery of the banks of that region. Mr. O. E. Sette of the United States Bureau of Fisheries has prepared from all the available statistics a summary of the total annual catches of cod of the region, as taken by Newfoundland, France, Portugal, Canada, and the United States during the past forty years or more. This summary shows that the cod fishery has furnished annually around a billion pounds of fish, ranging from eight hundred and fifty million pounds to one billion three hundred and fifty million pounds. Although there have been considerable fluctuations, these have been upward as much as downward, so that there is no evidence of any definite decline in the fishery or of any depletion of the stock.

The codfish has been a particular object of investigation for this committee. Mr. W. C. Schroeder has been studying the cod of the coast of the United States, and has found that fish living in the summer off cape Cod migrate to the New Jersey coast during the winter and return in the spring. In the winter of 1926 this migration was smaller than in previous winters. In the fall of 1925 and during 1926 smaller fish than previously appeared off cape Cod and predominated in the catches. Correspondingly the fish of the winter of 1926 off the New Jersey coast were reported as smaller than usual. Fish tagged at Mount Desert, Maine, have been found to move chiefly eastward to both coasts of Nova Scotia,

only an occasional one moving westward and reaching as far as cape Cod. Fish tagged on Georges bank in 1926 have yielded only one return so far, and that on the same bank, showing no distant movement whatever.

Mr. G. L. Duff has studied the growth of the cod in Canadian waters, finding in particular that the scales do not grow similarly to the whole fish throughout the year, but grow relatively more rapidly at one time and relatively less rapidly at another. Cod have been tagged, 275 off Halifax, N.S., in 1925, and 3,747 off Shelburne, N.S., in 1926. Of the former lot more were recaptured in the following year than during the year in which they were tagged. They were retaken only along the coast and at no great distance, going more to the southwestward (nearly to Liverpool, N.S.) in the second year. The Shelburne cod showed very little movement, and that chiefly to the eastward, going as far as Liverpool, N.S., during the season, but reaching farther eastward to Halifax during the succeeding winter.

The haddock of the Canadian coast have been under investigation. Dr. Huntsman and Mr. A. W. H. Needler have found that the haddock population of the Bay of Fundy, particularly of the New Brunswick shore, failed to receive any considerable number of young for a series of years, with a resultant decline in the fishery. Then the young came in suddenly and in a year or two the fishery greatly increased and has continued at a high level. Mr. Needler has found that the haddock grows more rapidly in the early years of its life in the warm waters of Passamaquoddy bay, New Brunswick, than in the cold waters on the outer coast of Nova Scotia near Lockeport, but this rapid growth falls off more rapidly in later years in the warm water than in the cold. He has found that the rapid growth of the year is limited to the months from August to October. Two thousand five hundred and forty haddock were tagged near Shelburne, N.S., in 1926. They showed very little movement southwestward along the coast, but considerable movement northeastward, as far as Halifax and Sable Island bank, twice as far as the cod tagged simultaneously with the haddock.

The Canadian investigations of the mackerel have shown that its spawning in the Bay of Fundy is negligible in amount and without success in producing fry, and on the outer coast of Nova Scotia the eggs fail to develop into fry. In the gulf of St. Lawrence, however, spawning is extensive and very successful. Late in the summer the fry are to be found passing out of the gulf around Cape Breton island. The eggs have been found to require warm water for successful development. Dr. P. Cox has been studying the mackerel of the Canadian coast, and finds evidence of differences between those of southwestern Nova Scotia and those of the gulf of St. Lawrence. In 1925 and 1926, two thousand three hundred and eighty-two mackerel were tagged in Canadian waters. The returns from those tagged at Yarmouth show movement northeastward to the Gut of Canso, northward into the Bay of Fundy, and westward to the coast of Maine. Fish tagged at the Magdalen islands in 1925 showed movement to Prince Edward island the same season, and the next year some of them returned to the coast near Halifax and in Massachusetts.

In the United States Mr. O. E. Sette has found that mackerel tagged in 1925 at various points from Buzzards bay, Mass., to Casco bay, Maine, spread in both directions along the coast from the point of tagging, but did not migrate far. The following year those recaptured were taken on the whole to the southwest along the coast from where they had been tagged the previous year, one tagged on the coast of Maine being taken at Fire island, N.Y. Mackerel tagged off Delaware and Maryland in 1926 gave one recapture several months later near cape Cod. Mackerel apparently spawned in the year 1923 have furnished a vast proportion of the commercial catches made on the New England coast in



1926, although the "1921" year class would seem to have contributed fair numbers in the autumn. Extensive spawning was observed in Massachusetts bay in 1926, where very large numbers of the eggs and fry were obtained.

#### INTERNATIONAL FISHERIES COMMISSION

This commission is entrusted, under the provisions of the North Pacific Halibut Treaty between Canada and the United States, with making a thorough investigation into the life history of the Pacific halibut as well as recommendations to the two Governments as to the regulation of the fishery in the North Pacific, including Behring sea, which may seem desirable for the preservation and development of the fishery. The treaty provides for an annual close season of three months—from November 16 in each year to February 15 following, both days inclusive—but upon the recommendation of the commission this close season may be modified or suspended at any time after three such seasons. The treaty became effective on November 1, 1924, and the commission began its work very shortly thereafter. Hence it is expected to submit its first report to the two Governments during the approaching year.

The task with which the commission is charged is one of great magnitude and involves very great and peculiar difficulties. The fishery extends from the coast of Washington, northward and westward to and including Bering sea. The commission has, however, been carrying out the investigation with energy and despatch, and it explains that notwithstanding some serious setbacks the work has so far progressed as anticipated.

Though the investigation must be highly scientific in method, the commission has insisted from the outset that it be carried out along practical lines with close adherence to facts and the avoidance of unsupported theory or speculation. Its aim is to determine beyond any doubt the actual condition of the fishery at present and its trend to such condition from the start, the nature of the remedial measures that should be applied to save the fishery and build it up and the conditions that must be met in applying such measures.

A wealth of statistical information has been gathered. This shows conclusively a general decline in the abundance of fish on all areas but especially on the more southern ones which have been fished for the longest period. For instance, in Hecate strait the average annual catch per skate of gear in 1914 was 165 pounds, while in 1926 it was 47 pounds. Then again, the size of fish taken is declining at an alarming rate. For instance, in 1921 the fish taken in Hecate strait were graded as 9.4 per cent large, 69.2 medium and 21.3 chickens and smaller, while in 1926 6.2 per cent were large, 63 medium, and 30.8 per cent chickens or smaller.

Extensive tagging operations have been conducted to determine the migration and to assist in ascertaining the growth of the fish. Studies have also been made as to races of fish, spawning conditions, sex, time of maturity, etc.

As it was essential that such work should be continued during the winter, including the close season, a suitable vessel was chartered for it. Splendid progress was made under the most trying weather and sea conditions until February 23 when the vessel was totally wrecked, but fortunately all on board were rescued, though the equipment of the scientific staff was lost.

About 7,000 fish were tagged up to the end of the fiscal year. Keeping in view the size and value of these fish, this is a large number. Of these approximately 900 have so far been returned. The commission explains that sufficient information has not yet been obtained to justify conclusions but the returns to date indicate that up to maturity there is practically no migration but that subsequently the fish may become migratory.

Investigations have also been conducted to determine the effects of using coarse and fine gear, i.e., large hooks and coarse lines, or small hooks and fine



lines. The indications are that the latter are more effective but do not, as was quite generally supposed, result in the capture of a much greater percentage of small fish.

The first report of the commission will be awaited with great interest not only by those interested in the two countries, but no doubt by investigators into fish life in all parts of the world.

#### MARINE BIOLOGICAL BOARD

This board operates under the control of the department. It has four stations; two on the Atlantic coast and two on the Pacific coast. At two of the stations on either coast, located at St. Andrews, N.B., and Nanaimo, B.C., fundamental researches are carried on, such as investigations into the life-history, growth and food of fishes, faunistic problems, physiological, biochemical and bacteriological work. At the other two located at Halifax, N.S., and Prince Rupert, B.C., the investigations deal with the methods of handling and preserving the products of the commercial fisheries. The Prince Rupert station was formally opened for work in November last.

During the year the board's staff, in addition to carrying on the ordinary work of the stations, again conducted short scientific and practical courses for fishery officers and fish hatchery officers, besides undertaking special investigations at the request of the Department.

The following were members of the board and its various committees during the year 1926:—

Dr. J. Playfair McMurrich, Chairman, Toronto, Ont.

J. J. Cowie, Secretary-Treasurer, Ottawa, Ont.

Dr. Philip Cox, Fredericton, N.B.

Dr. C. J. Connolly, Antigonish, N.S.

Dr. E. E. Prince, Ottawa, Ont.

Dr. C. H. O'Donoghue, Winnipeg, Man.

Very Rev. Canon Huard, Quebec, P.Q.

Dr. A. H. Hutchinson, Vancouver, B.C.

Dr. W. T. McClement, Kingston, Ont.

Dr. A. H. McKay, Halifax, N.S.

John Dybhavn, Prince Rupert, B.C.

A. Handfield Whitman, Halifax, N.S.

#### MEMBERS OF CENTRAL EXECUTIVE COMMITTEE

Dr. J. P. McMurrich.

J. J. Cowie.

Dr. W. T. MacClement.

Dr. E. E. Prince.

#### MEMBERS OF ATLANTIC SUB-EXECUTIVE COMMITTEE

A. Handfield Whitman, Chairman.

Dr. A. H. McKay.

Dr. C. J. Connolly.

Dr. P. J. Cox.

Dr. A. G. Huntsman, Secretary.

#### PACIFIC SUB-EXECUTIVE COMMITTEE

John Dybhavn, Chairman.

Dr. A. H. Hutchinson.

Dr. C. H. O'Donoghue.

Dr. W. A. Clemens, Secretary.

## RESEARCH COMMITTEE

Dr. A. G. Huntsman, Chairman.	Dr. R. E. Foerster, Secretary.
Dr. W. A. Clemens.	Dr. A. H. Leim.
Dr. C. H. O'Donoghue.	Dr. Philip Cox.

Director Atlantic Coast Stations, Dr. A. G. Huntsman.

Assistant Director Atlantic Coast Stations, Dr. A. H. Leim.

Director Nanaimo, B.C., Station and Advisory Director Prince Rupert Station, Dr. W. A. Clemens.

Director Prince Rupert, B.C., Station, Mr. D. B. Finn.

A detailed report on the work of the Board's staff will be found at Appendix No. 2 of this publication.

## SCALLOP AND OYSTER INVESTIGATIONS

During the summer of 1926 the department's naturalist conducted the following investigations:—

- (a) Scallop investigation in Mahone Bay, N.S.
  - (b) Scallop investigation at Ecum Secum, N.S.
  - (c) Oyster investigation in Tracadie Harbour, N.S., Ostrea Lake, N.S., and other localities in Nova Scotia and New Brunswick.
  - (d) Investigation of the effects of the slipper limpet on the oyster.
  - (e) Examination of quahaugs on the north shore of New Brunswick.
- A report on these investigations forms Appendix No. 4 of this report.

I regret to report the loss of life of sixty-five fishermen during the year—sixty-three on the Atlantic coast and two on the Pacific coast.

I am, sir,

Your obedient servant,

A. JOHNSTON,  
*Deputy Minister of Marine and Fisheries.*

## APPENDIX No. 1

### REPORTS OF INSPECTORS OF FISHERIES

#### REPORT OF WARD FISHER, CHIEF INSPECTOR OF FISHERIES, PROVINCE OF NOVA SCOTIA, FOR 1926

The upward trend in production and value of the fisheries of the province has been marked, largely due to the vigorous and successful efforts to extend the Canadian markets, and to create a demand for improved quality products in the United States. These efforts were largely the result of the Fordney tariff, so-called, on fish and fish products entering the United States, and revealed to a surprising degree the possibilities for expansion of trade by the adoption of methods well known and practised by those engaged in other industries.

It is interesting to note the progress for the four-year period, as follows:—

	Catch	Marketed value fish and fish products
	lb.	\$
1923.....	198,000,000	8,448,385
1924.....	219,000,000	8,777,251
1925.....	247,000,000	10,213,779
1926.....	315,000,000	12,505,922

The history of the industry during the year 1926, was one of the most unusual, unparalleled features. Never in the history of the fisheries was there greater interest awakened, greater production achieved, wider markets secured or a brighter outlook for the oldest of the provincial resources.

At the opening of the season the markets were practically bare of supplies, as the catches of the preceding year were hardly sufficient to meet the demands, notwithstanding the catches were 28,000,000 pounds greater than in 1924.

The shortage of supplies for the first three months of 1926, or until the end of the Lenten season, was so pronounced that a large number of orders from outside the province could not be filled. Indeed, this condition has continued to a considerable degree throughout the year. It is probably that this condition cannot be favourably met until operating facilities are greatly increased, and cold storage and processing establishments are enlarged.

The interesting feature in this regard, which speaks volumes for the need of continued enlargement of the markets is that the catches for the summer months of June, July, August, September and October were 52,000,000 pounds greater than the same period of 1925.

As a further evidence of the expanding markets, it should be noted that more than two thousand carloads of fresh and smoked fish products, together with large quantities of less-than-carloads, and by express, were forwarded to the upper provinces and the west as far as British Columbia.

An additional evidence of the growing interest in the fisheries is seen by the number of new and proposed establishments in all parts of the province.

The proposed new cold storage plant for Halifax has become an absolute necessity, and will probably be constructed during the present year.



The value of such establishments has already been referred to. Our inshore and offshore fisheries are of such particular value as to become a necessity. Fishing fleets, operating from ports where such plants exist, follow as a matter of course. Centralization of operations is important, if such fisheries are to survive or revive. Halifax, Canso, Port Hawkesbury, North Sydney, Yarmouth and Lunenburg are cases in point.

Fifteen new vessels were built the past year. In addition to these, a number of vessels employed in fishing, but for several years engaged in freighting, returned to the fleet.

The steam trawler *Willoughby* purchased in England arrived at Halifax November 25, from which port she will operate the present winter. The *Willoughby* is a 138-foot steel vessel, having a registry of 127 tons.

The *Lord Darling*, 100 tons net, which arrived from Grimsby in December, 1925, has been landing its catch at Canso and Port Hawkesbury.

### YEAR'S REVERSES

While the fisheries were prosecuted with eminent success, there were two outstanding reverses.

The loss of two of the Lunenburg fleet, with all hands, constituted the greatest tragedy in the history of the fleet.

In 1925, when four fishermen of the Lunenburg fleet were lost, the first sea-side memorial service was held. It was a beautiful and most impressive tribute, the sea bearing on its bosom the wreaths and flowers of remembrance, which drifted with the tide, rising and falling in unison with the singing by the choirs massed on the harbour front. It was not anticipated that greater cause for sorrow would come for many years.

The loss of life the past season was well nigh overwhelming, and held in thrall the eight thousand persons in attendance at the public memorial service held on Sunday afternoon, October 3.

The roster of the dead contained the names of 52 fishermen, 25 of whom were lost with the *Sylvia Mosher*, and 23 with the *Sadie Knickle*, when both schooners were wrecked off Sable island in August. The Captains, John D. Mosher and Charles Corkum, were exceptionally fine characters and held in highest esteem. They drew an eager, sturdy and enterprising group of fishermen to man the schooners. The loss, therefore, was the more deeply felt and added to the solemnity of the memorial service.

In the 7th of August gale 11 of the 13 large motor boats owned by the fishermen of New Harbor, Guysboro county, were lost, together with much fishing gear. Along other portions of the coast much damage was done to vessels, boats, establishments and gear.

### THE PRINCIPAL FISHERIES

The increase in the catch of all varieties of deep sea fish was general, with the exception of mackerel and tuna, which shows a decrease of over 500,000 pounds, and 10,000 pounds respectively. Herring increased by nearly 6,000,000 pounds.

The three outstanding fisheries were the cod, the catch of which was 185,-890,000 pounds, having a marketed value of \$4,652,858, the haddock with a catch of 45,830,000 pounds, and marketed value of \$1,671,971, and the lobster fishery with a catch of 18,431,600 pounds, having a value of \$3,386,416.

The haddock fishery is becoming more valuable each year, as the demand for fresh, fresh filleted and smoked is rapidly increasing.

Of the cod catch the Lunenburg Grand Banks fleet landed 342,730 quintals, having an estimated value of \$1,700,000. The total number of vessels in the fleet was 92, an increase of 12 over 1925.

The average catch per vessel was 3,725 quintals, and like the total catch the highest in the history of the industry. The highliner for the season was the schooner *Mayotte*, Captain George Himmelman, with 5,450 quintals. The schooner *Mayotte* was at first mentioned as one of the possible contenders in the fishermen's races off Halifax, but at that time she was getting ready for a trip to Bay of Islands for a cargo of herring. The schooner *Maxwell Corkum*, Captain Leo Corkum, with 5,050 quintals, has the next highest catch.

The prices received for the first two catches this year was \$5.50 per quintal, a few vessels receiving \$6 per quintal. Several cargoes of the summer fish have been sold at \$5.50 per quintal, and it does not look as if the price will go any higher. Last year the fishermen received \$7.25 and \$7.15 for the first two catches, and \$8 for the summer catch.

### LOBSTER FISHERY

The lobster catch was 18,431,600 pounds, valued at \$3,386,416, and by districts as follows:—

Cape Breton catch, 4,287,400 pounds, valued at \$660,006, an increase of 909,600 pounds, and in value \$140,968.

Eastern Mainland catch, 6,036,700 pounds, an increase in the catch of 944,700 pounds, and in value \$202,293.

Western Mainland catch, 8,107,500 pounds, a decrease in the catch of 492,500 pounds, but an increase of \$28,192 in value, due to better prices.

The following totals show the catch, pack and values, as compared with 1925:—

	Catch	1926		Pack
	Cwts.	Marketed value	Cases	Value
		\$		\$
Inverness.....	14,603	205,769	6,358	193,456
Richmond.....	8,338	133,698	2,362	70,024
Cape Breton.....	12,975	196,204	6,315	188,430
Victoria.....	6,958	124,335	3,283	122,865
Halifax.....	8,217	169,953	1,858	58,185
Guysboro.....	17,952	309,473	5,599	176,688
Antigonish.....	9,816	164,096	5,264	161,304
Pictou.....	17,294	258,310	8,617	252,050
Colchester.....	330	5,287	174	5,202
Cumberland.....	6,758	102,874	3,134	91,667
Lunenburg.....	3,313	64,281	479	14,814
Queens.....	4,737	73,456	85	3,060
Shelburne.....	23,289	513,379	4,893	157,573
Yarmouth.....	37,024	761,351	6,866	226,201
Digby.....	11,937	285,626	990	31,631
Annapolis.....	706	16,944		
Kings.....	69	1,380		
	184,316	3,386,416	56,277	1,753,150

	Catch	1925		Pack
		Marketed value	Cases	Value
	Cwts.	\$		\$
Inverness.....	11,156	168,928	5,267	163,175
Richmond.....	6,721	98,540	2,676	77,068
Cape Breton.....	10,875	162,444	4,832	145,424
Victoria.....	5,026	89,126	2,456	86,230
Halifax.....	5,176	92,728	1,134	34,185
Guysboro.....	11,650	184,527	2,794	87,723
Antigonish.....	8,664	134,673	4,297	133,213
Pictou.....	16,840	265,139	8,649	261,485
Colchester.....	638	9,557	319	9,471
Cumberland.....	7,952	121,076	3,773	112,278
Lunenburg.....	2,327	32,182	306	9,580
Queens.....	5,751	77,923		
Shelburne.....	24,811	448,454	6,553	199,270
Yarmouth.....	39,977	836,152	9,420	300,058
Digby.....	11,941	265,514	1,269	40,482
Annapolis.....	1,043	23,500		
Kings.....	150	4,500		
	170,698	3,014,963	53,745	1,659,642

## MACKEREL, HERRING, ETC.

The mackerel fishery was quite generally unprofitable, as the American markets were well supplied and frequently over-supplied, with the large catches of the American fishermen. This was particularly true of the spring catch, which was so heavy as to keep the markets depressed during the fall run. As an instance of the conditions obtaining, it may be noted that of the large catch made at Hubbards early in November, 270 barrels were iced and shipped to Boston. The price offered was only 4 cents per pound, and as this would not pay transportation and duty charges, the shipment was returned to Hubbards, where the mackerel were salted and sold at a fair profit.

The gear largely used in the mackerel fishery, particularly of Cape Breton island, is wholly inadequate. While these fish were in great abundance in the island district, the catch was negligible, as hook and line fishing, largely practised, was futile the past year. Cape Breton pickled mackerel are the best produced and frequently bring a higher price in the American markets than importations from any other country. Notwithstanding the abundance of the American catches, there is a strong demand for the Cape Breton article, which demand cannot be met, owing to the inadequacy of the hook and line fishing method. Antigonish and the adjacent waters of Northumberland strait, teemed with mackerel, large quantities of which could have been taken had the fishermen been equipped with suitable nets. There are hardly 100 first class mackerel gill-nets along that shore.

Similarly, the herring fishery, which offers excellent opportunities for expansion, suffers from lack of proper fishing appliances. While greater attention has been given to this fishery the past year than for a long time, the markets for fresh and smoked herring are rapidly increasing in value.

The swordfish catch increased from 455,100 pounds to 1,293,600 pounds.

This fishery was a great boon to Cape Breton county, where the catch was nearly 800,000 pounds. The Guysboro county catch was over 300,000 pounds. Good prices were received by the fishermen, faring from 12 cents to 24 cents per pound. As a result of the success better equipped boats will be secured, and greater efforts made to exploit this valuable fishery.



Halibut increased from 2,025,000 pounds to 2,372,500 pounds, salmon from 842,200 pounds to 1,342,800 pounds, and flounders, skate and sole from 2,066,300 pounds to 3,526,400 pounds.

#### THE SCALLOP FISHERY

The scallop catch was 39,836 gallons shelled, valued at \$138,472, as compared with 24,808 gallons valued at \$76,025 for 1925. Of this quantity 29,285 gallons were taken in the Bay of Fundy waters, and 9,929 gallons in the Chester-Mahone district.

The Chester, Mahone bay, and adjacent Tancook islands district, was the earliest scallop fishery exploited commercially in the Maritime Provinces. It was not, however, until 1912 the the fishery was of sufficient importance to have a "habitation and a name" in the official statistical reports. In 1912 about 500 gallons, shelled, were reported. The catch gradually increased until more than 10,000 gallons, shelled, were taken. Over-fishing, however, has depleted. Since 1920 the catch has averaged about 6,000 gallons shelled, or 12,000 barrels.

The Bay of Fundy development is noteworthy, the catch increasing from 210 gallons in 1920 to over 29,000 gallons last year.

While it was well known that considerable quantities existed in Digby basin and the Bay of Fundy waters, it was not until 1920 that the fishery was taken seriously. In that year 210 gallons were produced in the basin waters. As this area was limited, and chiefly valuable for operating when weather conditions were not favourable in the outside waters of the Bay, attention was given to the Fundy waters of Digby and Annapolis, with the result that a most remunerative fishery has been established, having at present some twenty-six well equipped boats engaged, of which some fourteen were added the past year. The value of each boat and equipment would average about \$3,000. The total investment is nearly \$100,000 and exceeds in value the former fleet of Digby cod and haddock vessels. Many of the boats are equipped with special hoisting engine and gear, as hauling the rakes and bags from the deep waters of Bay of Fundy is too labourious to be done by hand.

Investigations have been continued along the coast from Digby to Canso. It is quite evident that the Bay of Fundy areas are very prolific, and extend all the way to Yarmouth, with the probability that the nature of the bottom is favourable for a much greater distance eastward.

With the increased production of the past five years, the markets have greatly improved. Large and regular shipments are made as far west as Chicago and Minnesota, arriving in excellent condition.

It is apparent that this fishery is bound to increase in importance, and afford good opportunities for the fishermen along the coast, not only of the mainland, but also Cape Breton, where it is known that scallops exist in good quantities.

#### THE OYSTER FISHERY

The total catch was 2,354 barrels, as compared with 2,644 barrels for the previous year. The opportunities for development are good, but little can be expected under the present unsatisfactory dual control, which is partly federal and partly provincial, resulting in a stalemate so far as any active comprehensive, or constrained efforts for betterment are concerned. A similar condition exists with respect to Prince Edward Island and New Brunswick.

Under proper control, and reasonable cultural assistance, the maritimes could within ten years produce at least 50,000 barrels of prime oysters. The markets are excellent and prices high. A good oyster is worth from \$15 to \$20 per barrel. A million dollar business giving employment to a large number of people should be the objective.

The Nova Scotia fishery has excellent possibilities. The two largest yielding districts, the River Dennys basin of Cape Breton island and the Caribou and adjacent districts of Pictou county, offer the best present opportunities. Oysters of fine quality are also taken in the Tracadie district of Antigonish county, and in *Ostrea* lake, Halifax county.

#### SPORT FISHING

The excellent service of the Fish Culture Branch is again evidenced by the greatly increased catches of salmon and trout. The principal rivers and streams were alive with young salmon and trout—young salmon and grilse having been particularly abundant.

The catch of the anglers in the Mersey was about 1,200 salmon, and on the Medway about 500. On the St. Marys the catch was greatly increased, the run being particularly heavy during June.

On the Margaree sportsmen captured about 500, as compared with 363 the previous year. While the June catch was small, owing to the weather being unusually cool, the run during July and August was good. On the Cheticamp the catch was 100. Since the installation of a fishway at Grand river, salmon are entering Loch Lomond, and a number were taken by anglers for the first time.

There is every prospect that with the continuation of the restocking of our inland waters, the sport fishery will continue to increase in value from year to year.

It should be pointed out that the salmon net fishery of the river estuary and coastal waters depends to a very large degree on the prosperity of the river fishery, and therefore all efforts to restock and protect the river fishery is of prime importance.

The total catch of salmon by anglers and netsmen was 1,342,800 pounds, having a value of \$253,000, as compared with 842,201 pounds for 1925. In 1920 the catch was only 336,100 pounds. The chief catches by the net fishermen were, in Northern Inverness 167,100 pounds, Antigonish 154,000 pounds, Guysboro 201,100 pounds, and Halifax 302,900 pounds. Increased catches were also taken in Queens and Kings.

#### PROTECTIVE SERVICE

The *Arras*, in command of Captain Barkhouse, laid up for annual overhauling and repairs on April 12, and was again in commission on June 22, sailing for the banks as "mother ship," ie the Grand Banks fleet on June 28, returning on September 10.

Dr. D. R. Webster, medical officer, reported 176 fishermen of the Lunenburg fleet received medical treatment, as compared with 124 the previous season. This service was much appreciated and assisted greatly not only in relieving disabilities, but in saving much time and expense to the vessels of the fleet.

The medical officer reports:—

"The *Arras* is totally inadequate for the work. Apart from being a small, slow boat, rolling badly, there is absolutely no accommodation for a sick person, one of the officers having to yield his berth. The saloon has to be used for consultation and treatment resulting in upset of the steward's routine and watches aboard the ship."

The *Arleux*, in command of Captain Cousins, sister ship to the *Arras*, was laid up for annual overhauling and repairs on February 2, and was again in commission on March 31. She was kept constantly busy during the year in ice-breaking, assisting vessels caught in the ice or otherwise distressed.

One noteworthy event was the successful trip to Sable island in search of bodies or wreckage from the Lunenburg fishing vessels *Sadie Knickle* and *Sylvia Mosher*, which were lost with all hands in the severe storm of August 7 and 8.

Both these ships rendered service of highest value.

The following is a report on the work performed by these boats:—

CRUISER "ARRAS"—CAPTAIN C. BARKHOUSE

The *Arras* was in commission on April 1 and at that date was at Mahone bay breaking ice and clearing channel to the town wharves.

April 6. Finished ice work at Mahone bay and Lunenburg.

April 7. Arrived Shelburne to clear ice from wharf.

April 9. Pulled the American fishing schooner *Josephine DeCosta* from shoal in Shelburne harbour to safe berth at wharf.

April 10. Proceeded and towed the schooner *Daniel Getson* out of ice to safe berth in harbour, then proceeded cruising east, arriving at Liverpool same day.

April 12. Received telegram from Deputy Minister of Marine and Fisheries to lay ship up, blow down boiler and get ready for annual refit.

April 14. The inspectors from Halifax inspected the ship and repairs needed. The crew were given annual leave for fourteen days, part of crew away at one time; the others went on return of first party to ship.

The ship was under her refit until June 19, and on June 22 proceeded to sea, cruising toward Lunenburg, and arrived at Halifax on June 23 to take in supplies for cruise to Grand Banks of Newfoundland with the Canadian fishing fleet.

June 26. Proceeded to sea and arrived at North Sydney June 29 to complete with coal.

June 30. Proceeded towards Newfoundland.

July 2. Arrived at Cape Broyle with the fishing fleet.

From July 3 to August 31 the ship was in close touch with the fishing fleet, giving medical attention and treatment to all sick men and taking hospital cases to the hospital at St. Johns. During the season one hundred and eighty-five sick fishermen were given medical treatment.

September 1. All fishing vessels were leaving for home and western banks. We then proceeded towards Cape Race to calibrate the Direction Finding Station.

September 4. We finished calibrating station and proceeded to sea cruising towards the western banks and Cape Breton waters.

September 7. Arrived North Sydney for coal and proceeded same day for south coast Cape Breton to watch American swordfishing vessels.

September 9. The swordfishing fleet leaving for western coast we proceeded west, calling at Halifax, Lunenburg, and Liverpool, returning to Halifax on September 11.

The ship then cruised on western station until 20th, when we received orders to proceed to Bridgewater. We remained at Bridgewater from September 21 until the 24th.

September 27. Arrived Liverpool to blow down and examine boiler for cleaning.

October 2. Proceeded to sea on patrol duty and at Lunenburg October 3 to attend the memorial service to fishermen lost during the storm off Seal island.



October 4. We proceeded to sea on patrol duty cruising towards Northumberland strait and Prince Edward Island waters calling at Halifax, Liscomb, Port Hawkesbury and arrived at Pictou, October 7.

October 8. We proceeded to assist the Inspector of Fisheries in stopping illegal lobster fishing at Pictou island and adjacent waters.

October 11. Embarked Mr. Sutherland, Inspector of Fisheries, and proceeded towards Pugwash and adjacent waters to clear up illegal lobster fishing.

October 12. Stopped and seized one motor boat and sent her in to Pugwash then proceeded towards Souris, Prince Edward island.

October 14. Arrived Halifax to attend the fishing schooner races.

October 16. Embarked Mr. A. Johnston, the Deputy Minister of Marine and Fisheries, to attend the schooner race.

October 18. Embarked the Bermuda football team to attend the schooner races.

October 22. Proceeded to sea on patrol duty cruising west calling at Lunenburg, LaHave, and Liverpool.

October 27. Found the American four mast schooner *H. Glass* anchored in dangerous position off Petite river and towed her to safe anchorage at Lunenburg.

October 29. Proceeded to sea cruising east, calling at Halifax, White Head, Louisburg, and arrived North Sydney, November 3 for coal.

November 4. Proceeded to sea cruising west, calling at St. Peters and arrived Halifax November 6. We proceeded same day cruising west, calling at Lunenburg, LaHave, and arrived at Liverpool. We then proceeded towards Halifax to calibrate Chebucto Head Direction Finding station.

November 11 and 12. Calibrated Direction Finding station and arrived Lunenburg. We then proceeded west, calling at LaHave and arrived Liverpool, November 13.

November 15. Proceeded to sea calling at Halifax, Sheet harbour, Port Hawkesbury, and arrived at Pictou, November 19.

November 20. Proceeded to sea calling at Port Hawkesbury and arrived North Sydney, November 22, for coal.

November 23. We proceeded to sea cruising west, calling at Port Bevis, St. Peters, Canso, and arrived Halifax, November 26.

November 29. We proceeded to sea cruising west, and took up our cruising station between Mahone bay and Shelburne.

December 8. Pulled the fishing schooner *R. L. McKenzie* off rocks at Lockeport.

December 10. Pulled the fishing schooner *Kathlean Creaser* off mud bank at Riverport.

We then proceeded on our station breaking ice, assisting fishing vessels, attending to small buoys and watching conditions on coast until February 2, when we received orders to proceed to Yarmouth and lay up for our annual refit.

February 3. Proceeded west calling at Liverpool and Shelburne. Arrived at Bakers wharf, Yarmouth, on February 7.

February 17. Inspectors from Halifax, inspected ship going over defects and starting work on ship.

The crew were given fourteen days annual leave.

The Lunenburg Grand Bank fishing fleet consisted of seventy-two sail; French fishing vessels, fifty-six sail; Newfoundland fleet twenty-one sail, and Portuguese fleet, twenty sail.

The Lunenburg vessels had a large catch of fish and plenty of squid bait on banks. Only two caplin baitings were taken the first part of season. From July 10 to the end of August, the Banks were covered with squid. The best

fishing was done forty to fifty miles east from the Virgin rocks. The French fleet all filled up and left the Banks, August 26. Newfoundland and Portuguese fleets left Banks all well filled on August 20.

On Middle bank, Quero bank, and St. Pierre banks we had forty-one French beam trawlers, also ten Canadian beam trawlers and eight United States beam trawlers.

During the year we had fifty-three American fishing vessels on the stations we were working on, these we boarded and examined fifty-seven times.

We had very few complaints about illegal fishing by foreign fishing vessels and not one complaint of interference by French beam trawlers on the Grand banks of Newfoundland.

During the year we gave assistance to thirty-one vessels, broke ice and cleared harbours and channels in Mahone, Riverport, Bridgewater, Lockeport, and Shelburne.

During the year we steamed eleven thousand, one hundred and fifty-one miles and consumed nine hundred and thirty tons of coal.

#### CRUISER "ARLEUX"—CAPTAIN H. P. COUSINS

March 30. The Lunenburg foundry finished repairs to ship.

March 31. Ship proceeded to sea arriving at Halifax for coal and supplies.

April 7. Cruising westward towards Lunenburg and Shelburne on patrol work.

April 8. Arrived at Shelburne, boarded several United States fishing vessels.

April 9. Proceeded towards Mahone bay and Indian point to break ice.

April 10. Breaking ice at Mahone bay and Indian point and proceeded to Lunenburg.

April 11. Breaking ice in LaHave river and assisting steamer *Urter* through ice to Bridgewater.

April 12. Breaking ice in LaHave river and Riverport.

April 13. Breaking ice and assisting fishing vessels to wharf at Riverport, breaking ice off shipyard Dayspring.

April 14. Breaking ice in LaHave river and releasing fishing vessels from ice.

April 15. Assisting vessels through ice in LaHave river.

April 16. Breaking ice in LaHave river and assisting fishing vessels through ice.

April 17. Pulled new fishing vessel *Pan American* afloat which was broken down on launch ways.

April 18. Proceeded to Halifax for supplies.

April 19. Proceeded towards Country Harbour to break ice.

April 20 to 23rd. Breaking ice in Country Harbour and proceeded to Guysboro.

April 24. Breaking ice at Guysboro and proceeded to Canso.

April 26. Pulled off the American fishing vessel *Columbia* ashore at Canso

April 28. Cruising westward.

April 29. Arrived at Halifax for coal and supplies.

May 1. Proceeded towards Canso to assist stranded fishing vessel *Hali-gonian*.

May 2. Arrived at Canso.

May 4. Pulled stranded schooner *Haligonian* off Canso ledges.

May 8. Breaking ice and releasing vessels at St. Peters canal.

May 12. Cruising westward towards Halifax.

- May 13. Arrived at Halifax.
- May 15. Cruising westward towards Lunenburg.
- May 20. Proceeded to LaHave river to assist schooner *Minas Prince*.
- May 21. Arrived at Lunenburg.
- May 25. Several United States seiners arrived in port, first to arrive on coast
- May 26. United States seiners arriving in port, no mackerel reported.
- May 29. Cruising off Sambro with thirty United States seiners, no mackerel sighted.
- May 30. Cruising off Sambro with thirty-seven seiners in sight.
- May 31. At Halifax for supplies, seiners in port.
- June 4. Cruising off Sambro with seining fleet.
- June 6. At Halifax, seiners in port.
- June 11. Cruising towards Canso with seining fleet, some mackerel taken. Local fishermen in Chedabucto Bay taking good hauls of mackerel from nets.
- June 13. Cruising off White point with seiners.
- June 16. Cruising towards Louisburg, seiners working west. Local fishermen taking few mackerel from nets.
- June 18. Cruising westward, United States seiners leaving coast for home, several seiners taking good catches of mackerel.
- June 20. Arrived at Halifax.
- June 28. Cruising westward towards Bridgewater and Liverpool on patrol work. Boats landing good fares of fish at Liverpool.
- July 5. Arrived at Halifax.
- July 9. Cruising westward towards Lunenburg and Shelburne, quite large quantities of herring taken at Shelburne. No American fishing vessels in port.
- July 15. Cruising eastward towards Liverpool and Lunenburg, large quantities of herring taken at Liverpool. No American fishing vessels in port.
- July 18. Arrived at Halifax for coal.
- July 23. Proceeded on patrol towards Lunenburg.
- July 26. Searching for illegal lobster fishing in Mahone Bay.
- July 27. Cruising westward towards Liverpool and Shelburne, herring being taken in large quantities at Liverpool and Shelburne. No American fishing vessels in vicinity.
- August 2. Cruising eastward towards Liverpool and Lunenburg.
- August 5. Arrived at Halifax for coal and supplies.
- August 9. Proceeded cruising eastward towards Canso.
- August 11. Cruising in Northumberland Straits to prevent illegal lobster fishing.
- August 19. Cruising towards Pictou and Canso.
- August 21. Cruising westward, sighted large fleet of local swordfishermen between Canso and Country Harbour, boats taking few swordfish. Several American swordfishermen off shore working westward.
- August 22. Arrived at Halifax.
- August 25. Proceeded cruising towards Sable Island in search of LaHave fishing vessel *Sadie Knickle* missing since the gale of August 7.
- August 26. At Sable Island. Landed on island and took up search for wreckage. Found on N.W. bar water tank and barrel of flour washed ashore from schooner *Sadie Knickle*, which proved that schooner had floundered near Sable Island.
- August 27. Continued search for more wreckage, cruising around N.W. bar and discovered two masts partly above water badly burned, supposed to be the American fishing vessel *Falmouth* burned near Sable Island in month of June.
- August 28. Arrived at Halifax, cleaning ship's boiler.



September 3. Cruising westward on patrol.

September 9. At Liverpool. Proceeded towards LaHave banks with party from Government Motion Picture Bureau on board taking moving pictures of vessels and dories fishing on bank.

September 10. Arrived at Halifax.

September 13. Proceeded towards St. Margarets bay, conveyed seized Italian steamer *Dori* which smuggled immigrants at Mill cove. Arrived with steamer at Halifax.

September 14. Ship hauled on marine railway at Dartmouth for underwater repairs and new bow plates for ice breaking.

October 1. Proceeded westward towards Chester and Lunenburg on patrol work.

October 3. At Lunenburg, attending memorial service for the men lost from the Lunenburg fishing fleet during the season of 1926.

October 4. Proceeded westward towards Liverpool. Fair quantities of mackerel taken in traps, no American seiners on coast.

October 6. Cruising eastward towards Halifax.

October 16 to 19. Attending schooner races *Bluenose* and *Haligonian* with press representatives on board.

October 22. Cruising westward in search of illegal lobster fishing.

October 26. Arrived at Shelburne, boarded several American fishing vessels.

October 27. Cruising towards Yarmouth.

October 29. Cruising up Bay of Fundy towards Digby, passed large fleet of scallop fishing boats. Fishermen report good scallop fishing, a number of boats being added to the scallop fleet during the year.

November 2. Proceeded to St. John, N.B. Fishermen report taking good catches of fish during season.

November 5. Proceeded towards Digby.

November 6. Cruising Bay of Fundy towards Yarmouth. Fishermen in Bay of Fundy report making good catches of fish during season. Boarded several American fishing vessels at Yarmouth.

November 15. Rechecking Yarmouth D.F. Station.

November 16. Rechecking wireless station.

November 18. Arrived at Liverpool, cruising towards Halifax.

November 19. Arrived at Halifax for coal and supplies.

November 26. Cruising westward on patrol work.

December 3. Arrived at Halifax for coal and supplies.

December 9. Proceeded cruising towards Canso.

December 10. Arrived at Canso to protect the winter fishing fleet.

December 14. Cruising in Chedabucto Bay with Canso fishing fleet.

December 17. Proceeded to Gut of Canso, pulled off stranded schooner *Lady Hill* ashore east side of Gut of Canso. Took schooner in tow to safe harbour Port Hawkesbury.

December 18 to January 21, 1927. Patrolling off Chedabucto Bay and White Point protecting fishing fleet and assisting motor fishing boats with engine trouble.

January 21. Fishing over at Canso, fish passing westward. Canso fishing fleet had a successful season for haddocking the best in several years. Owing to the mild weather the fishing fleet fished until January 21, 1927, the latest the fish have remained on the coast for several years.

January 23. Ship proceeded towards Halifax.

February 5. *Arleux* relieved C.G.S. *Arras* at Liverpool and took up ice patrol duties breaking ice in harbours along the coast and releasing fishing ves-

sels from ice to prepare for their first trip to the fishing banks. The following harbours were broken open and vessels released:—

Harbours broken open—Riverport, LaHave, Mahone Bay, Indian Point, Shelburne, Sheet Harbour, Country Harbour and Boylston.

Vessels released and assisted through ice—*Arucante*, *Pulitana*, *Mary Pauline*, *D. D. MacKenzie*, *Delawana II*, *Marshal Frank*, *Autagua*, *R. M. Symons*, *Clara Creaser*, *Agnes J. Myra* and several other fishing vessels relieved from ice. Assisted pulp steamer *Adolf Bratt* to wharf through ice at Sheet Harbour and assisted steamer out of harbour.

The *Arleux* was successful in keeping the harbours open on the coast and giving assistance to the fishing fleet during the winter.

March 29. Reported all harbours open. The *Arleux* takes up her usual fishery patrol duties.

#### FISHERIES PATROL SERVICE

The patrol boat *Mildred McColl*, in command of Captain Williams, went into commission on April 15. During the season a 50 horse-power Bergsund crude oil engine was installed to replace the worn out Sterling engine. Also a 4 horse-power hoisting engine was installed for the purpose of adequately fitting her out for scallop investigation in the work in which she was engaged with Mr. Andrew Halkett, the naturalist of the Department, in investigating scallop conditions along the eastern shore. The larger part of the work was in lobster and scallop protection service.

This boat is now admirably outfitted for any duty that may arise.

Patrol boat *F. P. I.*, commanded by Captain Baker, went in commission June 15, and laid up December 21. While this boat gave every satisfaction during the season, the district from Minas Basin including the Bay of Fundy shore, around to Lockeport, Shelburne county, is too great to be patrolled in any adequate manner. A substantial boat is required for the Bay of Fundy district to Brier Island, including St. Mary's Bay, particularly since the development of the scallop fishery of the district, as under present conditions it takes a month to make a single patrol over the district.

The Inspectors and Overseers have quite satisfactorily dealt with the rapidly increasing volume of work due to the greatly increased interest in the fisheries. The Fish Culture Branch, the Experimental Station and the Pickled Fish Officers have assisted in our work very materially. In particular, Mr. Andrew Halkett, the naturalist of the Department, has been performing service of greatest value. Indeed, during the past five years Mr. Halkett's investigations and studies of our shell fisheries have been of highest importance. The value of his work among the fishermen is evidenced by the increasing sympathy and assistance given him by the fishermen where his investigations are carried on.

REPORT OF J. F. CALDER, INSPECTOR OF FISHERIES, DISTRICT  
NO. 1, PROVINCE OF NEW BRUNSWICK, FOR 1926

District No. 1 comprises the counties of Charlotte, St. John, Albert and the Bay of Fundy watershed of Westmoreland county.

The following statement shows the catches and marketed values for the past year:—

		Value.....\$	
Cod.....	40,544 cwts.		86,345
Haddock.....	33,042 "		72,680
Hake.....	38,652 "		33,521
Pollock.....	38,271 "		47,185
Halibut.....	140 "		2,413
Flounders.....	1,807 "		5,818
Skate.....	181 "		480
Herring.....	228,611 "		327,439
Sardines.....	171,637 bbls.		1,172,490
Smelts.....	312 cwt.		4,063
Alewives.....	34,400 "		86,027
Salmon.....	3,810 "		74,275
Shad.....	3,384 "		35,425
Cockles.....	76 "		418
Dulse.....	5,186 "		13,780
Lobsters.....	6,130 "		213,808
Scallops.....	245 "		1,084
Winkles.....	1,409 "		3,903
Clams.....	17,833 bbls.		75,718

The total value of the catch marketed is \$2,296,541 against \$1,859,003 for the previous year.

#### COD

A large increase is to be noted in the catch of cod as compared with that of the previous year—40,544 cwts. against 19,370 cwts. for 1925.

#### HADDOCK

Haddock were plentiful, especially during the latter part of November and the month of December. The total catch was 33,042 cwts, as compared with 16,539 cwts. for the previous year.

#### HAKE

There was a large falling off in the catch of hake as compared with the previous year. The yield for the present year was 38,652 cwts. while 59,643 cwts. were taken in 1925. The shortage in the catch was not entirely due to scarcity of the fish; a considerable portion of it is due to the very poor prices being paid for the fish. If, at least, fair prices had been offered, the catch would have been much greater.

#### POLLOCK

A satisfactory increase is again to be noticed in the catch of pollock as compared with the previous year. Thirty-eight thousand two hundred and seventy-one cwts. were taken this year as compared with 28,804 cwts. in 1925, and 8,391 cwts. in 1924. Of course, this catch is very much less than that of a number of years previous to 1924. At the same time, it is reassuring to know that the catch for the past two years is on the increase.

#### HERRING

A considerable increase is to be noted in the catch of herring as compared with the previous year—228,611 cwts. were taken this year, while 171,814 cwts. were taken in 1925. The greater portion of these fish are put up as smoked



herring, which is largely confined to the island of Grand Manan. Again there was an abundance of these fish, and one of the largest packs of smoked herring ever made was put up. At the same time, a very much larger quantity would have been put up if there had been a market for the product. The demand for smoked herring, at the present time, is poor and the price is low. The quality of the fish is very fine and a large pack was made; at the same time, unless there is a marked improvement in the market conditions, very little, if any, money will be made from this very important branch of our fisheries.

#### SARDINES

There was a slight increase in the catch of sardine herring—171,637 barrels were taken this year as compared with 158,259 barrels for the previous year. Sardine herring were again very plentiful, with a very limited demand. The American canneries took only limited quantities, while they were in operation. Most of them did not open until quite late in the season and closed down by the middle of October. Owing to the abundance of these fish, the limited demand for them, the large quantities which went unsold and the evident, organized attempt of the canners to break the "Sale for Export" price condition in the license for the weirs, as well as the disposition on the part of many of the licensees to become a party to such infraction, the task of enforcing the arrangement became unbearable. A considerable number of the licenses were suspended for alleged violation of the sale condition. Inquiries under oath were held in each case. A number of convictions were obtained and the licenses cancelled. Others were found to be innocent and other dismissed for lack of evidence. Owing to the almost insurmountable obstacles in connection with the enforcement of this condition, and the lack of co-operation of a large number of the licensees, to say nothing of the all too-evident disposition on the part of some to break the condition, the situation became extremely unsatisfactory; it appeared to have reached the stage when only the men who would violate the sale condition, were selling their catches. But, right here, I want to pay tribute to the large number of upright, honest fishermen who stood honourably by the arrangement, which, as you are aware, was adopted at the solicitation of all the fishermen. These men lost the opportunities to sell their catches, while their unprincipled neighbours were disposing of theirs. In view of all this, it was finally deemed necessary by the Department, and wisely, I think, under the circumstances, to rescind the sale condition. At the same time, there is no question but this arrangement put several hundred thousand dollars in the pockets of our fishermen during the three years it was in operation; the fact that the canners were so persistent and resourceful in their efforts to defeat the measure, is sufficient proof of such statement. Next year, the fishermen will have to fight their own battles in this regard. The outcome will be closely followed. I sincerely hope that the canning combine pay our people a fair price for their fish. However, if they do not, I shall recommend an amendment to the Fisheries Act requiring all boats, engaged in buying herring from the weirs, to take out a license under certain conditions, with the license to be forfeited in case of any of the conditions being violated. This will place the restrictions on the foreign buyer and not on the weir-owner, as was the case with the arrangement which has been done away with.

I am pleased to be able to report that the local sardine pack was the largest in the history of the industry. I am reliably informed that the pack next year is to be even greater than it was during the present year.

SALMON

Again there was a considerable increase in the salmon catch; 3,810 cwts. were taken against 3,193 cwts. in 1925, and 2,793 cwts. in 1924. It is gratifying to know that the salmon fishery is more than holding its own.

CLAMS

An average quantity of clams—17,833 barrels—were taken during the present year. The yield for 1925 was 11,507 barrels, while 23,907 barrels were taken in 1924. As stated in previous reports, the quantity of clams taken really depends on the demand for them and the prices being paid. It seems that there is never any difficulty about procuring the quantity the trade requires.

SHAD

There was a slight falling off in the quantity of shad taken—3,384 cwts. against 3,797 cwts.—for the previous year. However, shad sold at a good price and the fishermen did well for the short time they were engaged. There was no run of fall shad.

ALEWIVES

The Alewife catch was practically double that of the previous year—34,400 cwts. were taken against 17,800 cwts. for the previous year. A ready market, with a fair price, obtained for this product.

LOBSTERS

There was a slight increase in the quantity of lobsters taken; 6,130 cwts. were taken this year as compared with 5,691 cwts. for the previous year. Good prices were paid for lobsters. The value of the catch marketed being \$213,808.

There is not much to note with regard to other minor branches of the industry.

I regret to report that the concerns engaged during the past few years in procuring the essence of pearl from herring scales were not in operation during the present year.

A better feeling is prevailing in the industry. It looks as if it is in for considerable improvement in the very near future. We have an abundance of the very best deep-sea fish to be found anywhere in the world, but market conditions have been deplorable during the past few years. All our fishermen need is the opportunity to sell their catch at a fair price.

CONFISCATIONS

Confiscations. . . . .	60
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PROSECUTIONS

Prosecutions. . . . .	27
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# REPORT OF A. L. BARRY, INSPECTOR OF FISHERIES, DISTRICT NO. 2, NEW BRUNSWICK, FOR 1926

This district covers that part of New Brunswick bordering on the bay Chaleur, gulf of St. Lawrence, and Northumberland strait, and including the counties of Restigouche, Gloucester, tidal waters of Northumberland, Kent, and the strait side of Westmorland county.

The total marketed value of the fisheries of this district for 1926 was \$2,998,007 compared with \$2,905,351 of the previous year, an increase of \$92,656. The following table shows the comparison between the catch and value of the fisheries for the years 1925 and 1926:—

	1926		1925	
	Quantity	Value	Quantity	Value
		\$		\$
Lobsters.....	53,481 cwt.	921,856	60,193 cwt.	874,569
Smelts.....	59,088 "	846,850	46,326 "	711,031
Salmon.....	20,779 "	320,322	26,334 "	357,421
Cod.....	160,890 "	386,273	186,174 "	472,388
Oysters.....	12,383 bbls.	92,535	12,038 bbls.	88,693
Tomcods.....	17,079 cwt.	61,242	13,056 cwt.	38,717
Herring.....	194,290 "	201,756	200,892 "	197,868
Clams and quahaugs.....	9,445 bbls.	35,644	7,989 bbls.	25,614
Mackerel.....	19,088 cwt.	65,188	16,707 cwt.	63,952
Alewives.....	17,717 "	28,426	16,395 "	24,323
Hake and cusk.....	5,166 "	11,583	7,249 "	12,544
Haddock.....	1,996 "	3,800	1,647 "	3,014
Shad.....	1,313 "	9,071	2,025 "	18,197
Flounders.....	50 "	50	231 "	704
Scallops.....	315 bbls.	3,678	11 bbls.	88
Mixed fish.....	51 cwt.	51	45 cwt.	45
Trout.....	137 "	2,040	161 "	2,256
Bass.....	426 "	6,590	477 "	6,820
Eels.....	119 "	894	406 "	2,750

## LOBSTERS

There was a decrease of 6,712 cwts. with an increase in value of \$47,287. The decrease was general, all along the coast. Over-fishing, due to fishing out of season, must be ascribed as the main reason for the decrease, that is going on year after year. The taking of berried lobsters in certain parts of the district, a matter which is very hard to check, is also a reason for the falling off of the catch.

## SMEELTS

There was an increase of about 13,000 cwts. with an increase of \$135,819 in value. In some parts of the district, notably at Baie Verte and Bathurst, the catch of smelts was the best for a number of years. It fell away considerably in the Miramichi district and the fishermen were particularly hard hit by the fact that very few smelts were taken in the river at the beginning of the season. There appears to be no apparent reason for this. A great loss was sustained in the Miramichi river early in the season when 140 nets were carried out by the ice. This represents a loss of approximately \$15,000. Since the introduction of the box net at Buftouche, the taking of smelts by spearing is gradually disappearing and only a few spearing shanties are now in operation. The quality of the smelts is thereby improved. There is a tendency among the fishermen to do away with the smelt gill-net fishing for a number of reasons. First, they receive only a small price for real high quality smelts. Secondly, the gulls



destroy a large quantity by diving down and digging them out of the nets. Thirdly, the better class of fishermen realize that the use of the gill-net paves the way for illegal fishing by bag-nets. Last fall the fishermen of Richibucto and vicinity held a meeting and voted unanimously to have the gill-net fishing discontinued. The year before the fishermen at Buctouche river asked and obtained the same restriction and it is hoped this coming year to extend the restriction further south.

#### SALMON

There was a decrease of nearly 6,000 cwt. and a decrease of \$37,099 in value. There is always a good demand for these fish and the large number of refrigerating plants along the shore makes it possible to take care of a large catch. The catch of the drift-net fishermen this year, for the Northumberland straits, opposite the Miramichi, was considerably less than any year since 1921, only 2,817 cwts. being taken by 56 boats, some of which did not pay the operating expenses.

#### COD

The catch of cod decreased 25,334 cwts., with a corresponding decrease in value of about \$86,000. The price of dried cod brought only \$6 per quintal compared with \$8 for the year before. Continuous windy weather throughout the fall probably accounts for the decrease in catch.

#### OYSTERS

There was a slight increase in the catch of oysters for 1926, being 345 barrels more than the previous year. There was an increase in the value of \$3,842. There is always an excellent market for this fishery and if some steps could be taken to improve the standard, and if they were put up in standard containers subject to inspection, there is no doubt that some dealers would take up the matter of cultivating oyster beds.

#### TOMCODS

There is an increase of 4,023 cwts. in the catch of tomcods, and an increase in value of \$22,525. There seems to be no decrease in the run of these fish, which are quite plentiful all over the district.

#### HERRING

Herring decreased in catch 6,602 cwts., but increased in value \$3,904. The rough weather in early fall interfered greatly with the catching of these fish.

#### MACKEREL

Mackerel showed small increases in catch and in value. There seems to be no great demand for this fish, which if a better market obtained could be taken in large quantities along the coast.

#### ALEWIVES

The catch and value of alewives increased over 1925. Practically all of these fish are shipped in a pickled condition.

#### SCALLOPS

While this fishery is not much developed in this district yet the number of licenses issued is increasing year by year; 315 gallons of shelled scallops were sold by the bay Chaleur fishermen last year, a considerable increase over the

previous year. There is no doubt there are extensive beds in bay Chaleur which only need experienced fishermen to make them yield a good return.

#### CLAMS AND QUAHAUGS

There was an increase in both catch and value of this fishery. One of the larger clam canners in the southern part of the district is making extensive improvements to the plant so it is anticipated that the pack will be much larger next year.

#### GENERAL

The decreased catch of lobsters for the year 1926 has caused many fishermen and dealers to realize that unless more drastic steps are taken for the protection of this fishery, many canneries will be forced out of business. What seems to be a turn for the better was indicated recently at a meeting of the lobster packers held at Moncton, when in conjunction with the fishery officers the packers agreed to work hand in hand with the department for better protection. Better results are looked for in 1927. A new method of checking up the lobster pounds was instituted last year, namely, weighing the lobsters left in pounds at the close of the fishing season. This has already shown good results and will be continued next year.

The coast has been visited by a number of severe storms during the year with considerable damage to lobster rigging and fishing vessels. One vessel was lost off Miscou island, value \$500 and another damaged to the same extent. Damage to the extent of \$1,000 was also caused to fishing staging and gear. Generally speaking there has been an improvement in the equipment of lobster canneries, more packers having installed the steam retort.

A regrettable incident occurred in October in Kent county when a guardian lost his life, apparently through foul play, by whom has not yet been determined. This guardian was engaged in the protection of the smelt fishery by night when he lost his life and the result has been to cause many fishermen to realize that continued violations of the law may eventually lead to something more serious. It would seem that a system of patrol by two or more guardians at seasons of the year when much illegal fishing is done would be necessary. One other fisherman lost his life while repairing a small schooner, the prop falling from under the boat which fell on him with fatal results.

Prosecutions numbered the same as last year, namely seventeen. The offences were as follows: Canning without a license, four; Fishing for lobsters out of season, three; fishing without a license, three; having illegally caught fish in possession, two; selling undersized fish, two; fishing salmon with an illegal mesh, one; dragging for oysters in a motor boat, two.

Confiscations dropped from 111 to 54. This was due largely to a part of the Miramichi Salmon waters being put under the district of Inspector Harrison.

There has been a continuous demand from the fishermen of the Miramichi to have more vigorous action toward the destruction of seals in the Miramichi Bay. To this end the fishermen have asked that the fee on salmon nets be brought back on the Miramichi waters and the amount realized from this fishery to be used for the destruction of seals. This request has been granted by the Department and it is expected to have between \$800 and \$1,000 available for this work this year.

REPORT OF H. E. HARRISON, INSPECTOR OF FISHERIES,  
DISTRICT No. 3, NEW BRUNSWICK, FOR 1926

District No. 3 comprises the counties of King's, Queens, Sunbury, York, Carleton, Victoria and Madawaska.

The spring of 1926 opened up just a month later than that of 1925. In the former year the first steamboat left St. John for Fredericton on the 4th of April, whereas the St. John river ice made its final move on the first day of May, 1926, and numerous may poles were erected on it as it made its way towards the Bay of Fundy. Likewise the earliest spring fishing, that of alewives, was delayed. On the 18th of April, 1925, the first fresh and fresh-smoked alewives were brought to the Fredericton market. In 1926 the first of this fish reached here the 8th of May, and both lots came from the Oromocto river, a tributary of the St. John a short distance below Fredericton. The Oromocto river opens up earlier than the St. John because of a strong current cutting the ice out before the spring freshet attains much height. Consequently about the first alewives taken in my district are taken from this river some eighty odd miles from the Bay of Fundy, and the late and cold spring affected the earlier runs of fish, such as the alewives and shad, but while the spring was late, and the weather kept cold and disagreeable for a considerable time after the ice moved out, the fishermen on the whole had a fairly successful season, a notable exception being the shad fishery, offset to some extent by the very good bass fishery.

The following figures in order of statistical record will give you at a glance the quantities and value of the different kinds of fish taken during the years 1925 and 1926.

ALEWIVES			
Year		Cwt.	Value
1925.....		684	\$2,052 00
1926.....		758	2,274 00

I think that there is no question but that the quantity of alewives taken could be greatly increased if there were a market sufficiently remunerative to induce the farmer-fishermen to fit out and operate, but this fish deteriorates in quality apparently quite quickly after entering the rivers and buyers for export do not care to handle many. Consequently the demand is not sufficient to encourage the fishery and the local trade in what the fishermen can handle in fresh, smoked and pickled condition is about the limit of the market. The alewife fishery was once a prolific source of revenue for many farmer-fishermen during the early spring weeks before farming was begun. This fish was reported to be very plentiful in the spring of 1926, and after the fishermen had ceased operating, because of farming operations coming on, there was some demand from the St. John market, but the nets had been taken up and put away and further operation was not carried on.

BASS			
Year		Cwt.	Value
1925.....		7	\$ 105 00
1926.....		212	3,816 00

Bass is the mystery fish of this district. The figures above will indicate about what happens every twelve or thirteen years. The last fairly respectable catch was in 1914, and in the interval very few bass are taken. Practically the whole catch comes from the Belleisle bay, an indenture about ten miles deep inland from the St. John river. Few other fish are ever taken in that water. This is wholly a winter fishery, and would be of considerable value to the farmers



along that water if the fishery would only hold out from year to year. It would be interesting to learn why bass come to this water in numbers only at long intervals.

EELS			
Year		Cwt.	Value
1925.....		60	\$1,020 00
1926.....		30	114 00

While the quantity of eels taken in 1926 was reported as 50 per cent less than the quantity taken in 1925 the price per cwt. went to pieces completely. In 1925 Overseer Bell quoted the price as \$17 per cwt., while the price quoted in 1926 is only \$3 per cwt. One might wonder why the fishermen bother with this fishery when the price is so low, but it is the practice for the fishermen to catch and hold eels in floating crates until the weather becomes cold in the autumn, so that there will not be so much need for ice to preserve the fish in transit. Consequently it is more or less a future market, and the market may be bad when time to ship comes, and this appears to have been the case in 1926.

MULLETS			
Year		Cwt.	Value
1925.....		342	\$1,026 00
1926.....		224	672 00

Mullet appear to have been taken in smaller quantities than in 1925. This is a sort of side-line, the fish being taken mostly in alewives and pickerel nets while fishing for the latter. Some are taken otherwise for eel bait, which I think mullet is more suitable for than anything else.

PERCH			
Year		Cwt.	Value
1925.....		Nil	Nil
1926.....		15	\$45 00

A few perch are taken in the pickerel nets in the early spring, autumn and winter, also some in the alewife nets in the spring, and a fairly ready sale is found amongst the Jewish people, mostly. This fish is considered very good for table use, taken when the water is cold.

PICKEREL			
Year		Cwt.	Value
1925.....		392	\$3,920 00
1926.....		368	4,416 00

While the catch of pickerel dropped off a few cwt. in 1926, the price quoted is \$2 per cwt. better than in 1925, and the total makes a considerable distribution of cash amongst the people who take this fish. Most of them are taken when the weather and water is cold, and the work is rather unpleasant, but is carried on when other work is not pressing, and it adds a little money to the purses of the farmers who do not leave their homes for lumber or other work, and when perch are taken at the same time, it helps at a time when the average farmer has little other revenue coming in. A considerable quantity of pickerel find a fairly ready sale amongst the Jewish population and some are exported.

SALMON			
Year		Cwt.	Value
1925.....		546	\$13,650 00
1926.....		552	13,800 00

Taking into account the fact that my district was enlarged in 1926 it will be observed that the total commercial salmon fishery was practically the same as in 1925. However leaving out the added district there was a small decrease, as

the added district did not add very much to the catch in 1926, and the decrease for the older district was 14 cwts. While 14 cwts. is not very much on the total, either gained or lost, I should prefer to have it on the other side of the score. The 20 cwts. credited to the non-tidal water of the Miramichi river, Northumberland county (the addition to my district in 1926), is the legal catch, and what is considered the maximum illegal catch, and Overseer Parks does not deny that some were taken illegally, but the quantity was a mere trifle compared with what it has been in past years. An analysis of conditions in my former district shows that in 1926 there was a slight falling off in Kings and Queens counties; a very considerable falling off in Sunbury county; a fair per cent of gain in York county; a slight fall in Carleton county, with a few more fish taken in Victoria county, the losses in four counties being 40 cwt. and the gains in two counties 26 cwt. A small gain or loss, and sometimes a large gain or loss, may easily be accounted for because of water conditions, if the up or down does not carry over too long a period continuously, for instance, on the lower St. John river, Kings county particularly, the nets do not get good catches of salmon in the early season as this fish seems to travel up river fairly fast and keeps well out in the river and the nets do not take many, then, should the river go low, and stay so for a good portion of the fishing season salmon again keep off shore and miss the nets in this region. Queens county has never, with the water at any stage, shown a production of salmon of consequence.

The elevation of the river in Sunbury county in the fishing season shows the same effect as it does in Kings, apparently the fish following the deeper water during the high and low periods, and when the water is of medium height it appears that they follow closer to the shores. I suppose that the same applies to Queens county, but there does not appear to be any, or many, even fair fishing stands at any stage of water in that county. A decrease of 17 cwt. in 1926 in Sunbury county is a very heavy falling off in that comparatively short area of water, and were it not for favourable returns in other areas I would think that it might begin to look serious. However in 1923 the catch was light, while 1924 and 1925 were very good. York county shows a very fair per cent increase while the catch in Carleton county shows a small decrease, although very good, taking into consideration the fact that this is non-tidal water with only thirty days fishing on an average, with varying conditions of water. The catch in Victoria county is of no or little importance any year, but 1926 was better than the previous year. The months of June and July were better periods than the month of August in the non-tidal district. The first fresh-run salmon that I have record of being taken was in the first week of June, 1926, while in 1925 there was a good run of fish before the 20th of May. There was a fair percentage of large salmon, from fifteen to twenty-five pounds each, last season. On the non-tidal portion of the Southwest Miramichi river in Northumberland county (the first year that it has been part of my district) the legal catch in the commercial fishery was very discouraging to the fishermen considering the number of permits issued, and I have very good evidence that the illegal catch was quite as discouraging. With the area of water and conditions which have existed for longer than I can remember, and the comparatively long stretches of water each fishery guardian has to patrol, and some of the guardians not the most efficient, it is quite impossible to prevent some illegal work. I should like to make it plain that to Overseer Parks is due most of the credit for the fairly satisfactory conditions there in 1926. From information I have been able to gather the quantity of salmon, mature fish, in the Miramichi river in 1926 was comparatively small, at least that is the testimony of the commercial fishermen on the non-tidal water, and part of the tidal water netters whom I met, and the testimony of the anglers without exception, and the grilse were, on the average, very small, a large percentage of them



weighing from less than three pounds to about four and one-half pounds. A very large quantity of these small fish were brought into the central part of the province for sale by truck or auto, and a quantity were seized and confiscated because of being under the three pound limit, and I was advised by several of the hawkers that they could have bought many smaller fish offered by the fishermen but refused to do so when they found that they would not be allowed to sell, or have them in their possession, if apprehended by a fishery officer, and in addition the undersized, and probably the whole load, would be seized together with the conveyance, with a prosecution following. I have as good evidence as it is possible to get that the illegal size fish were not taken in the non-tidal water district. Possibly there is a reason for the excessive number of very small fish (grilse) running in the Miramichi river and the reported scarcity of salmon (mature fish). I am not prepared to offer a reason.

SHAD			
Year		Cwt.	Value
1925.....		1,902	\$11,412 00
1926.....		720	4,320 00

I now come to a matter that may cause some questionings. The excessive falling off in the catch of shad does not look good, and I am not sure that it can be explained satisfactorily. A drop of 1,182 cwt. in one year is difficult to explain. The subdistrict officers have explanations, and they pretty well agree as to the cause of the light catch of shad in 1926, and while the reduced catch may look serious at the present time, and may need correcting in some way in the future, there appears to be nothing to do but wait for further evidence, and that can only be had through further experience. What is to me a somewhat relieving feature is the information that the catch of shad in St. John harbour was heavy in 1926. Overseer Bell reports that shad had reached his district by the 10th of May, 1925, while the first that he knows of being taken in 1926 was on May 31, about three weeks later, and at that time he states shad were selling in the St. John market for fifteen cents per fish. Therefore his version of the greatly reduced catch in 1926, amounting to 965 cwt. in his district alone, is because of the backward spring, continued high water and a poor market, and shad arriving only about June first, the fishermen had not more than twelve nights to operate. In 1925 there was a special opening of the shad fishing season on May 9, which gave the fishermen a long season, with a consequent comparatively heavy catch. In Sunbury and York counties this fish was still later reaching the fishing areas, and a still shorter season to operate, and the fishermen reported the water too high. The reduced catch in these two counties amounted to 148 cwt. or from 180 cwt. in 1925 to 32 cwt. in 1926. Shad is not fished for in Carleton county water, with the exception of one operator some seasons, and only a small quantity is taken in the salmon nets, set for salmon only. The very late run affected the catch in Victoria county to a greater degree than in the lower water, and the catch fell from 74 cwt. in 1925 to 5 cwt. in 1926, the legal fishing season closing before the only three fishermen in that county had time to operate with any success. The officers and the fishermen without exception state that there appeared to be plenty of shad in the rivers, but because of conditions noted they were unable to get them in their nets. I only hope that the versions are true, and I have no reason to question the statements of all these men. Considerable quantities of shad are brought into the central part, and may be the southern part of the province from the Miramichi river district for sale, and this, no doubt, helps to lower the price to be obtained by the St. John harbour and river fishermen, and the consumers no doubt appreciate that phase. I would be sorry to see the time when it would be considered necessary to again wholly restrict the fishermen



of this district from taking some shad each year, and I trust that conditions are not again leading up to that. Rather than see that I would strongly advise, if necessary, the reducing of the netting privilege now allowed, which could be done in Kings and Queens counties, where two nets are used by many families, and allow only one net per family, but I trust that this will not be necessary. No shad are taken in the non-tidal parts of the Miramichi waters.

STURGEON			
Year		Cwt.	Value
1925.....		42	\$1,050 00
1926.....		57	1,425 00

The catch of sturgeon was about normal, but a little better than the 1925 catch, with the per cwt. value the same as the previous year; while about 100 pounds of caviar were sold, at a comparatively low price per pound.

The total weight and value of the commercial fisheries of this district during the years 1925 and 1926 are as follows:—

Year		Cwt.	Value
1925.....		3,975	\$34,235 00
1926.....		2,936	30,930 00

a decrease of 1,039 cwt. and \$3,305 in 1926.

MATERIALS			
Year			Value
1925.....			\$14,425 00
1926.....			15,185 00

The total weight and value of the domestic fisheries in this district for the years 1925 and 1926 are estimated as follows:—

DOMESTIC FISHERIES			
Year		Cwt.	Value
1925.....		454	\$ 8,780 00
1926.....		648	13,120 00

The very substantial increase in 1926, of 194 cwt. and \$4,340, which includes the non-tidal waters of the Miramichi river in Northumberland county for the first time, is satisfactory, while the rods and lines and canoes used by anglers in 1925, exclusive of the added territory, were valued at \$16,560, with the added territory in 1926 the same was valued at \$17,332.

The trout fishery seems to have been about an average on the whole. The ordinary brook trout is reported to have been rather scarce, but that apparent condition may have been due to the cold, backward spring, and high water continuing a considerable period in the early summer. Sea trout were said to be much more plentiful in the non-tidal district of the Miramichi river. It appears to me that I can observe a considerable change in the sentiments of the average angler, particularly in the counties of York and Carleton, regarding trout fishing. Formerly practically all anglers were quite enthusiastic if they could be assured of fairly good trout fishing within a reasonable distance of their homes, and if they could have good sea trout fishing they were more than pleased, but now, and this refers more particularly to the residents of the cities, towns and villages, they want nothing less than good salmon angling, and are not satisfied with good grisle fishing even, but there are a great many persons who cannot afford the time to go after salmon and spend two or three days or more and outfit with expensive rods and lines, etc., and probably have to employ a guide, and such people, if they fish at all, must depend upon the trout streams for their angling pleasure. Consequently it is encouraging to them to know that the department is using much effort to keep the streams and lakes supplied with trout.

It is with considerable satisfaction that I am able to report a fairly successful salmon angling season, generally speaking. This sport on the St. John river was not better than ordinarily is the case, but this river has not yet proven itself a reliable angling water. Under exactly right conditions it is possible to take a great many salmon with the fly from this water. This happened in 1923, when it appeared possible to take salmon with a fly at many places between Fredericton and Grand Falls, and take many of them, but it never was so before nor since, in my experience. The non-tidal portion of this river is fairly large, and while there are many pools, and other likely places, where it might appear that salmon do, or would, stop for rest and cool water, the fact remains that salmon do not, generally speaking, rise well to a fly. The river never gets so low but that salmon can pass along up at any stage of water without any trouble, and I think they move along faster towards the upper, or breeding waters, than they do in some other and smaller rivers. The 1923 season referred to was exceptional in that there was a very heavy freshet the latter part of June and early July and the water was not at all normal. Every evidence shows that there were lots of salmon passed up the St. John river in the 1926 fishing season. Coming to the Tobique river, and the angling interests there, there is a better story to tell. It is the united judgment of the Tobique Salmon Club, the Ogilvy Brothers, and the Messrs Frasers, besides the owners of private angling pools, that such salmon angling has not been enjoyed on that water in the history of modern angling. The Tobique Salmon Club has been established there about thirty-five years, and to their credit be it said they have practically made good angling there by the employment of a large force of guardians and strict enforcement of the law. Their report is that 1926 was the best season, by long odds, in their experience. To me there is only one cause for this condition, and that is nature was kind. So far as assisting the salmon up the St. John river, to reach the Tobique, the assistance of your officers and guardians was not greater than it has been for a number of years, i.e., since the service was taken out of the slough it was in previous to 1918. Your officers and guardians did not work harder in 1926 than they have been doing for some years. As has previously been stated, the Tobique Club angling is confined practically to the months of June and July, after which their camps are closed, which makes a short season, and they need a good run of salmon during the months of May and June, which we evidently had in 1926, and providence is to be credited with that, and the apparent satisfactory conditions after salmon reached that water. Outside of some privately controlled and expensively and strictly protected water. I do not think it possible to give a river the size of the St. John better protection than this river is getting in recent years without considerable enlargement of the protective force, and at an expenditure that might seem unwise. The illegally killed salmon on the St. John river in recent years is, in my opinion, negligible.

Coming to the Southwest Miramichi river and tributaries I have a different but fairly favourable story to tell regarding matters in connection with the non-tidal portions. Generally speaking conditions in this area have been anything but good. Only one year that I can recall, and that was 1923, when conditions were alike on the St. John and Miramichi rivers because of a large freshet in late June and early July, have salmon anglers generally on the upper waters had a fair show, not because there were not considerable quantities of salmon and grilse in that water and trying to reach the upper water, but other interests prevented. Conditions have been too well known to require lengthy comment, and this water, as well as Overseer Parks and his fishery guardians, having been added to my district in 1926, it was up to me to try to show that something better was to be had, and I am very pleased to be able to say that there was an apparent improvement, and the Protective Associations and anglers generally in the upper Northumberland, York and Carleton county districts have not been reluctant in expressing their appreciation of conditions in 1926. As previously



written into this report, the quantity of grilse, with the individual fish being rather small, reaching the upper waters appeared to be excessive as compared with the quantity of mature fish, but it was a fact for which I am unable to account. I shall say this, and aware of what I am saying, that the mature fish were not unduly sorted out by the nets in the non-tidal water, and it would appear to me that the trap-nets in the tidal water were not responsible for the scarcity of large fish in the upper waters, and I can only think that there must have been a comparatively small run of large fish in that water in 1926. I am advised by Mr. William Griffin, the President of the New Brunswick Guides' Association, who has fishing lodges on the Miramichi river, in York county, that while his guests—foreign anglers—got comparatively few salmon they had all the grilse fishing they wished, with most satisfactory results, and the Carleton Branch of the New Brunswick Fish and Game Protective Association expressed appreciation regarding the angling in Carleton county in 1926. If this result was attained by consistent and hard work I wish to say that my part in it was small. I advised and urged for better protection in this new part of my district, and gave otherwise what little attention I could spare from my office to the work there. While we had one extra fishery guardian in that area I do not know that we had a better class of men than were there other seasons. Consequently I have got it down now to where the real effective work was done, and that is to Overseer Parks' hard work; not only to his personal patrol, but to his insistence that his fishery guardians give proper attention to their work so far as it was in his power to do so. The result was not attained by any special act of Providence, so far as favourable water conditions were concerned, as the river was low much of the season without any freshet during the season until October, which was too late to affect angling. Much illegal work was attempted, but it was checked quickly, and comparatively few fish were illegally taken, and I may add the legal catch, with 49 permits issued on the sixty miles of water, was disappointingly small to the gill-net fishermen. The gill-nets on the non-tidal water of the Miramichi river, if controlled as the law requires, will never greatly affect the quantity of salmon and grilse reaching the upper or angling and spawning areas, and only a poor run of fish, or unnatural nature conditions, or ineffective protection, will prevent a large number of salmon or grilse, or both, reaching the upper waters.

#### FISHWAYS

The fishways in this district are reported to be in satisfactory condition, but several of them are of none or little value.

#### PROSECUTIONS

Prosecutions during the year numbered twenty-eight, as follows: 14 for illegal fishing with nets of various kinds, 4 for handling (having for sale) salmon illegally killed, 2 for killing fish with explosives, 1 for fishing salmon with spear and torch, 1 for assault and 6 for water pollution.

Fines to the amount of \$885 were imposed by civil magistrates. Fines to the amount of \$205, part of which were imposed previous to 1926, were paid, and fines to the amount of \$560 were suspended for the present, and two cases where fines of \$100 and \$50 were imposed are being appealed.

#### CONFISCATIONS

Fifty-one seizures and confiscations were made, and included in the materials are one Ford truck, two Ford automobiles, and over thirteen hundred pounds of salmon, the balance being illegal gear such as twine nets, wire netting for salmon traps, old boats and spears and torches, the whole having an approximate value of \$1,000.



Sales to the value of \$209.45 were made, much gear destroyed, being of no value for sale, or inadvisable to sell it in the district where seized, and a small amount still held for sale when it is possible to dispose of it.

The total amount of revenue collected and credited to the Receiver General during the year was \$844.45.

## REPORT OF S. T. GALLANT, INSPECTOR OF FISHERIES, PROVINCE OF PRINCE EDWARD ISLAND AND MAGDALEN ISLANDS FOR 1926

The total marketed value of the fisheries of the Province of Prince Edward Island for the year 1926 was \$1,358,934, a decrease in that of 1925 of \$239,185.

The following table is interesting as showing the comparison of the catch and value of the year 1926, and that of the preceding year:—

		1925		1926	
		Quantity Caught	Value Marketed	Quantity Caught	Value Marketed
			\$		\$
Cod.....	cwt.	61,483	150,135	49,823	116,616
Haddock.....	"	968	1,652	1,472	3,065
Hake and Cusk.....	"	14,939	22,981	13,803	20,881
Mackerel.....	"	6,220	23,246	6,054	20,653
Herring.....	"	64,942	83,703	63,930	89,915
Halibut.....	"	21	210		
Alewives.....	brls.	84	225	360	720
Salmon.....	cwt.	90	1,800	164	4,015
Smelts.....	"	17,595	142,496	15,390	98,670
Trout.....	"	107	1,328	111	1,332
Albacore.....	"	975	4,875		
Caplin.....	brls.	138	552	157	628
Eels.....	cwt.	320	3,311	192	2,162
Tom Cod.....	"	2,555	6,336	2,331	4,664
Clams and Quahaugs.....	brls.	1,560	9,758	867	4,533
Oysters.....	"	5,278	52,780	5,161	61,898
Tongues and Sounds.....	cwt.	48	960		
Cod Liver Oil Medicinal.....	gal.	25	50	30	45
Cod Oil.....	"	7,030	2,109	5,730	1,719
Fish Oil, other than Cod Oil.....	"	1,800	900		
Lobsters.....	cwt.	78,570	1,088,712	66,298	926,718

### COD

West Prince county shows an increased catch over that of last year of 3,120 cwt.; East Prince county, an increase of 172 cwt.; Queens county a decrease of 9,171 cwt., and Kings county a decrease of 5,781 cwt. The decrease may be attributed to the rough weather prevailing during the entire season. The dog-fish nuisance is also responsible for the large decrease in Kings county.

### HAKE AND CUSK

West Prince county shows an increase over that of last year of 2,758 cwt.; Queens county a decrease of 1,295 cwt.; and Kings county, a decrease of 2,599 cwt.

### HERRING

West Prince county shows a decrease of 315 cwt.; East Prince county, an increase of 15 cwt., Queens county an increase of 1,329 cwt., and Kings county a decrease of 3,941 cwt.

## MACKEREL

On account of the small prices offered for fresh mackerel this fishery was not carried on to any extent. There is a decrease in the total catch of 166 cwt.

## SALMON

This fishery was carried on at St. Peters and a beginning was made on a small scale at Winter River, a tributary of Tracadie bay. This fishery will be further developed in the near future, especially in Richmond and Alberton bays. There was an increase in the total catch of 74 cwt.

## SMELTS

The season opened for gill-net fishing on October 15 and good catches followed throughout the season. Bag-net fishing opened on December 1, but on account of mild weather this method of fishing was delayed until the last of December when the ice made. Bag-net fishing has not been so successful as last year.

## LOBSTERS

Due to unfavourable weather at the beginning of the season the catch on the north shore was a disappointment to both fishermen and packers; on the south shore, however, that is, from Souris to Victoria, the catch was about normal.

The lobster fishery is by far the most important in this Province, affording an annual revenue of from \$1,000,000 to \$1,200,000, and every protection possible should be given it in order to assure a successful future. In the last few years what are known as jumbo lobsters, that is, lobsters from five to twelve pounds in weight, have been taken in large numbers, and as these are largely the reproducing factors in the industry, it is to be feared that this practice if allowed to continue, will have a disastrous effect on the industry. Also, a very large number of immature lobsters measuring in length from three and one-half to six inches are being taken by the fishermen. Although both fishermen and packers make a profit for the time being on these lobsters they will undoubtedly lose out in the end, for it will be impossible to expect an increased catch if this practice is continued.

A lobster six inches long, and four years old, after being boiled weighs four ounces, while a lobster five inches long, and three years old, after being boiled, weighs about two ounces. It would appear, then, that these small lobsters will about double their weight in one year's growth. I am of the opinion that it would be in the interests of the Maritime Provinces to agree in establishing at least a six-inch limit. Jumbo lobsters weighing over four pounds cannot be sold alive; consequently they are boiled and have to be cut up to be packed in the can. The meat is of an inferior quality and this means the placing on the market of very undesirable product.

In West Prince county the decrease was 4,178 cwt.; in East Prince, a decrease of 1,276 cwt.; in Queens county a decrease of 3,423 cwt.; and in Kings county a decrease of 3,395 cwt.

## OYSTERS

There is a small decrease in the total catch of 117 barrels, but an increase in the market value.

The buyers are taking special care to select oysters to meet the demands of the markets, good prices were maintained throughout the season, and it appears that the markets could have absorbed a much larger quantity of these

shell-fish. East River and tributaries, West River and tributaries, Seal and Vernon Rivers, are well stocked with small oysters and we are now assured of an annual yield of about 5,000 or 6,000 barrels from these areas. It is pleasing to note that a small beginning has been made to fish oysters in the Richmond Bay area, some 14 barrels having been taken.

There are unlimited possibilities for the oyster industry in this province if the proper methods of oyster culture were adopted. A thorough survey should be made of all the areas in the different rivers of this province and oyster culture should be undertaken under scientific instruction. If this were done it is probable that the export could be increased from 5,000 to 40,000 or 50,000 barrels per season. From observations of some of these areas last summer it was ascertained that oyster fry will not survive on silted bottoms, so that a system of cleaning the oyster areas should be undertaken as soon as possible. This work should be carried on in the month of June as oysters spawn on or about the middle of July.

## FISHERIES PROTECTION SERVICE

Some attempts were made at illegal lobster fishing, but there was a strong fleet of patrol boats on duty which were fairly successful in preventing fishing being carried on to any extent. This system of protection has proved the most effective in recent years.

Total Number of Confiscations for violations of the Fishery Regulations during the year 1926, covering 67 seizures.....	32
Total Number of Prosecutions.....	14

## REMARKS

The fishways built in 1925 at Laird's Milldam, Campbell's Milldam, Dixon's Milldam, and at Vernon river, are proving a success and should improve trout fishing in these streams. It is to be hoped that several fishways will be built in other dams throughout the province as trout fishing is carried on very extensively both by our residents and tourists, the latter increasing in number from year to year. As trout are our only sport fish during the summer months, everything possible should be done for their propagation.

## MAGDALEN ISLANDS

The total marketed value of the fisheries of the Magdalen islands for the year 1926 is \$623,175, a decrease in that of last year of \$82,637.

The following table gives a comparison of the catch and value of 1926 and that of 1925:—

Kinds of Fish	1925		1926	
	Quantity caught	Value marketed	Quantity caught	Value marketed
		\$		\$
Cod..... cwt.	70,020	171,380	38,892	87,010
Herring..... "	153,780	90,106	126,620	84,552
Mackerel..... "	41,105	109,894	17,595	64,823
Smelts..... "	40	120	50	250
Eels..... "	20	140	30	240
Clams and Quahaugs..... brls.	2,700	16,300	1,975	11,500
Lobsters..... cwt.	21,601	311,038	25,375	375,743
Squid..... brls.	75	750	25	250
Tongues and Sounds..... cwt.	25	175	40	280
Cod Oil..... gal.	8,781	3,410	6,700	3,850
Seal Oil..... "	2,604	1,354	3,500	1,750
Marine Animals, Seal..... cwt.	912	1,185	1,200	2,400
Fish skins..... "			200	500
Fish bones..... "			300	75



## COD

The demand for cod was poor, consequently this fishery was not carried on to the same extent as last year. Good catches were made during the month of June, but in the months of July and August one hundred and sixty fishermen left the Islands to hire with the Wayagamaek Pulp Company, of Anticosti; consequently, a decreased catch of 31,128 cwt. is the result.

## HERRING

Due to ice conditions herring fishing did not begin before the 15th of May, and at this late period the usual number of vessels did not call for supplies.

There was a decrease of 27,160 cwt. A large quantity of the catch was smoked and as the Magdalen islands are noted for putting up a superior quality of this fish, the demand was good and good prices were realized.

## MACKEREL

There is a decrease in the catch of 23,510 cwt. Much better prices were obtained for mackerel this season as the fish were of a superior quality. The catch was small and special care was taken in the curing process.

## LOBSTERS

There is an increase in the catch of 4,774 cwt. notwithstanding the fact that ice conditions delayed fishing operations some seven or eight days later than last year. Complaints have been made to the fishery overseers of the destruction of lobster gear by the fishermen themselves. In the last two or three years fishermen have set in fifteen or twenty trap lines without anchors, and when these traps were being overhauled they very often drifted across another man's line; in turn, when this man had occasion to haul his gear and found a line of traps over his he had to cut the traps in order to free his own gear. It is evident then that this practice is becoming a real nuisance.

It might be advisable to have a change made in the Regulations to the effect that lobster lines should be anchored at each end.

## REMARKS

Navigation with the Magdalen islands opened on May 3, the steamer ss. *Lovatt* making her first trip there on that date. This boat is giving entire satisfaction so far as passenger and freight service are concerned, and the captain and crew are very obliging and most attentive to their duties.

### REPORT OF J. B. SKAPTASON, INSPECTOR OF FISHERIES, PROVINCE OF MANITOBA, FOR 1926

The year 1926 has been a banner one both as to catch and prices obtained, surpassing the previous year by more than eleven million pounds of all fish with an increase of \$872,193 in market value.

	Quantity	Value to Fishermen	Value as Marketed	Number Men Employed
	Cwt.	\$	\$	
1923.....	154,090	739,321	1,020,595	2,526
1924.....	177,898	886,410	1,232,563	2,828
1925.....	190,240	1,061,331	1,466,939	3,390
1926.....	305,830	1,744,642	2,328,803	3,809

This is very definite increase, and out of all proportion to the increased number of operators. The increase in production is spread pretty well over the entire province, and in nearly all the principal varieties of fish, goldeyes, perch, pickerel, pike, trout, tullibee and whitefish, show a relatively heavy increase, while only in two varieties, catfish and sturgeon is there an appreciable decrease.

## MARKETS

Market conditions have been good for the whole of the production.

The following are comparative prices as marketed of the more important varieties for the last four years:—

	1923	1924	1925	1926
Catfish.....	10.0	11.1	10.6	11.3
Goldeyes, fresh.....	4.0	3.8	4.2	4.0
Perch.....	5.1	7.2	11.2	13.4
Pickerel.....	7.1	8.5	11.5	10.3
Pike.....	3.7	3.5	4.0	4.0
Sturgeon.....	47.3	50.0	40.9	51.6
Trout.....	7.5	10.0	9.0	11.1
Tullibee.....	5.2	3.6	4.2	5.9
Whitefish.....	7.2	9.5	9.5	9.0
For total catch.....	6.6	6.9	7.7	7.6

*The sub-district of The Pas.*—Comprising all waters north of and including the Big Saskatchewan River, but not the northern part of Lake Winnipeg, has enjoyed a good season in all varieties of scale fish. Sturgeon however was a very decided disappointment both in the Nelson River and the Big Saskatchewan waters. In the former, where the Armstrong Independent Company operate exclusively between Cross Lake and Kettle Rapids, the following shows the annual decrease for three years:—

1924	1925	1926
85,000 Lbs.	65,000 Lbs.	45,000 Lbs.

In 1924 fishing was stopped early in August because the company's allotment of the 100,000 pound limit for the river had been taken. These years show practically a relative falling off in sturgeon production in the waters of the Big Saskatchewan. There was practically no commercial sturgeon fishing carried on in the Churchill during the winter of 1926. Three licenses were issued for the vicinity of Pelican narrows. These three between them barely had a one man outfit of nets, and only 2,100 pounds of sturgeon were brought out.

The winter operations for small fish was fairly successful, and in view of the fact that the majority of the operators are not entirely fishermen but divide their time between fishing and trapping, the season may be considered a fruit-

ful one. As the statistics give the returns for The Pas under one heading only, it may be of interest to show here the distribution by lakes:—

Lakes	Number of men	Whites	Pickereel	Trout	Pike	Tullibee
		Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Moose.....	12	1,292	381	55	97	10
Pelican.....	5	913	6			
Egg.....	5	796			6	
Cormorant.....	7	328	271	19	104	52
Sturgeon.....	1	20	36	2		
Beaver.....	3	704	28	103	3	
Lost.....	1	9	56		35	12
Trout.....	2	170	30		25	
Herb.....	9	377	453		44	
Clearwater.....	9	406		134		
Running.....	8	226	56	77	113	
Athapapuskow.....	2	40	3	9		
Reed.....	1	47	6	18		

A great deal of interest is evidenced by fishermen in the opening up of new fishing waters with the completion of the Hudson's Bay Railway. Judging by the inquiries coming into this office a considerable influx may be expected to these northern waters, as well as to the bay itself.

*Lake Winnipegosis.*—The catch in this lake shows a very definite improvement, both summer and winter, and while there is some increase in number of men fishing, the individual catch was much greater for 1926 than 1925.

	1924		1925		1926	
	White	Pick	White	Pick	White	Pick
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
Summer.....	1,316	6,323	926	5,084	1,458	10,556
Winter.....	6,908	8,872	5,289	8,464	6,879	14,673
Total.....	8,224	15,195	6,215	13,548	8,337	25,229

*Lake Manitoba.*—This lake had possibly the best year in its commercial fishing history, the total catch exceeded the previous year by nearly three and one-half million pounds, the average price obtained was slightly higher and the catch per man exceeded any previous year.

	1923	1924	1925	1926
Number of fishermen.....	626	779	905	1,128
Total production.....	Cwt. 25,655	Cwt. 48,658	Cwt. 51,587	Cwt. 85,256
Catch per man.....	41	62	57	76

The increase over the previous year is spread fairly well over all varieties of fish produced, pickerel showing an increase of over one million pounds, tullibee approximately the same, pike three-quarters of a million, and perch three hundred and eighty thousand pounds.



This lake is served by railways on both sides to its very northern limits, for that reason it lends itself particularly well to the fresh fish industry, which is becoming ever more popular. Prices obtained by this method of marketing are much higher, and cost of freighting and other operations less. This naturally attracts an ever increasing number of fishermen to the lake. The congestion of nets has become quite a problem as well as a source of danger to the future of the lake, even if such is not evidenced by the above quoted figures.

*Lake Winnipeg.*—This lake has more than kept pace with the other waters of the province in increased production. Only sturgeon and catfish show a decrease. All other varieties show a very large increase, with only a small increased number of fishermen operating. The total increase of all fish for 1926 as against 1925 are shown by the following figures:—

	1925	1926
	Cwt.	Cwt.
All fish.....	84,763	141,726
Winter and summer operators.....	1,791	1,828

The summer whitefish catch was the best in years. The limit of 3,000,000 pounds was slightly overtaken and all nets lifted a week before the season closed. The following are comparative figures for six summer whitefish seasons:—

1921	1922	1923	1924	1925	1926
Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.
29,271	24,724	14,554	12,311	20,185	30,041

It will be noted that the statistical returns show the quantity of whitefish as 33,115 cwts. The difference is accounted for by whitefish taken during the fall pickerel operations. Perhaps the most encouraging feature of the whitefish situation during last summer's operations was the generally equal distribution of the fish all over the northern areas of the lake, even to the south of Swampy Island.

The pickerel catch during fall and late summer fishing was also very good, the best in years, as indicated by an increase as follows:—

	Cwt.
1925.....	10,626
1926.....	22,860

The greatest increase of all is in the tullibee catch, the run came on fully two weeks earlier than usual, with the result that very large quantities of this fish were taken during the latter part of the pickerel fishing. The figures for the two years are as follow:—

	Cwt.
1925.....	3,404
1926.....	16,620

The winter season also shows marked improvement in all the above mentioned varieties.

It is regretted the same encouraging report cannot be submitted regarding the sturgeon fishing situation on Lake Winnipeg, that has characterized this report on all other varieties of fish. Taking the figures of sturgeon production for the last three years as a basis, there seems reason to fear that here also

this valuable fish may be facing the fate it has so generally met with elsewhere. The following are figures for three years:—

	Cwt.
1924.....	886
1925.....	697
1926.....	309

I believe the time has come when serious consideration should be given the necessity of closing the lake for sturgeon fishing during a period of years.

During the year there were 42 prosecutions in the district for the following violations of the Fisheries Act and Regulations:—

For fishing without a license.....	10
For fishing without a permit.....	2
For refusing to place identification on nets.....	1
For obstructing streams.....	1
For using illegal mesh.....	9
For using excessive fishing gear.....	1
For possession in close season.....	6
For fishing in close season.....	4
For operating a fish trap.....	2
For spearing fish.....	2
For fishing in closed area near St. Andrews Locks.....	4
	<hr/> 42

There were also 163 confiscations during the year.

Wm. A. Found, Director of Fisheries, visited the district early in April with a view to holding conferences with fishermen and dealers. Well attended meetings were held at Selkirk, Winnipeg and Winnipegosis. The Fishery Regulations were thoroughly reviewed at these meetings and many valuable suggestions made for amendments which are now under consideration.

#### REPORT OF G. C. MACDONALD, INSPECTOR OF FISHERIES, PROVINCE OF SASKATCHEWAN, FOR 1926

During the year there has been a total commercial production of fish in the Province of Saskatchewan of 56,715 cwts. This is a decrease from the previous year of 5,076 cwts. Whitefish decreased 7,311 cwts., and Trout 40 cwts., Pickerel increased 22 cwts., Pike 201 cwts., Tullibee 1,460 cwts., Sturgeon 15 cwts., and the coarser species 397 cwts.

#### WINTER SEASON

During the winter commercial fishing season the production was 52,424 cwts. This is a decrease of 4,983 cwts. There was a decrease of 6,868 cwts. of whitefish; 101 cwts. of trout; 101 cwts. of pickerel; while the following increases were recorded in the coarser species—Tullibee 1,317 cwts.; Pike 174 cwts.; Mulletts 343 cwts. and mixed fish 73 cwts.

The decrease in the production of whitefish has been general on all waters except Jackfish Lake, Ile a la Crosse Lake, Okemasis Lake and in the Montreal Lake District. Peter Pond Lake shows a decrease of 5,278 cwts. This was chiefly due to only one company operating during the season and also owing to operations ceasing early in January. Dore Lake shows a decrease of 952 cwts., and Lac Des Isles and Pierce Lake 105 cwts., Makwa and Worthington Lakes 623 cwts., Waterhen Lake 271 cwts., Turtle Lake 894 cwts., Green Lake 191 cwts., Long Lake 124 cwts., and Jackfish Lake 350 cwts. Ile a la Crosse Lake shows an increase of 1,143 cwts. of whitefish; Okemasis Lake 161 cwts., and Montreal Lake District 76 cwts; Lac la Ronge 506 cwts. The decrease in the production of whitefish is attributable to the changeable weather conditions

during January and February when the fishermen had to be continually changing their fishing grounds from deep to shallower waters and in some instances nets were too deep to be operated successively in the shallow waters, and some nets were destroyed by the cork lines freezing to the ice. At certain periods of mild weather, fish could not be properly packed and for days at a time nets were kept out of the water. On some lakes fishing conditions were not of the best during December owing to the heavy fall of snow before the ice was properly formed, resulting in the ice cracking and causing a deep slush on the ice. In districts such as Ile a la Crosse, Montreal Lake and Lac la Ronge where increases are shown, this is due partly to an increase in the number of fishermen operating and partly to the fact that no slush had to be contended with. Of the coarser species of fish there is an increase of 1,317 cwts. of tullibee. Of this amount Peter Pond Lake accounts for 638 cwts., Minitikiwan Lake 388 cwts., and Dog Lake in the Okemasis Lake district 11 cwts. The further increase of 1,581 cwts. of the coarser species, consisting mainly of Pike, is reported due to the shallow water fishing carried on.

There were 1,319 cwts. of fish shipped in a green state during the winter season.

#### SUMMER SEASON

During the summer commercial fishing season the production was 4,291 cwts. This is a decrease of 93 cwts. from the previous year. Approximately the same number of men operated as in the previous season. The summer limit of 200,000 pounds was reached on Long Lake on July 10th. The limits at Turtle and Makwa Lakes were not reached at the close of the season and very little fishing was carried on at these lakes during July and August owing to the declining market. Jackfish Lake shows a small increase and Okemasis Lake a corresponding decrease.

#### MARKETS

The total market value of the year's commercial production was \$444,288. This is a decrease from the previous year of \$50,594, and is chiefly accounted for by the smaller production. The price obtained for whitefish was practically the same as the previous year. Trout increased approximately one cent a pound in value, and the coarser species, such as pike, pickerel and tullibee, were about the same as last year.

During the summer season the opening markets were quite favourable, but during the latter part of June prices declined to such an extent that fishermen operating on lakes situated distances from the railroad were compelled to cease operations.

Prices obtained during the winter were fairly steady and shipments were not held up for any considerable time and practically no fish were stored during the spring.

All fish shipped from the lakes tributary to Prince Albert and Big River are packed in regulation fish boxes. A large amount of fish are still shipped in sacks, from the Battleford district, which command a smaller price on the market.

#### CONDITION OF THE FISHERIES

The general condition of the fisheries throughout the Province might be considered as favourable. Very few new lakes have been opened up, due probably to the cost of construction of roads leading to them. Operations have increased on such lakes as Ile a la Crosse and Lac la Ronge, both showing an



increase in production. Dore Lake, which has been a heavy producing lake for years, shows a slight decrease in the catch of whitefish, while other species have increased some.

Long Lake, on which there is both a summer and a winter limit, produced about the same amount as last year. The summer limit was reached on July 4th, while the winter limit was not reached at the close of the winter season, being some 100 cwt. short.

Turtle Lake on which there is both a summer and a winter limit, neither of which were reached, is no doubt declining and is largely due to the great amount of net fishing carried on under Indian and Halfbreed Permits, of which there were 76 issued during the year. An effort should be made to replenish this lake the coming season, and to close the spawning grounds from all net fishing as recommended.

Lakes such as Red Deer, Little Trout and Crean have fallen off, more or less, during the year. Montreal Lake, which was fished during December, for the first time in years, was a failure. This was largely due to the fact that while this lake is large, it is very shallow and whitefish do not inhabit it during the winter season.

Jackfish Lake shows an increase in production with a slight decrease in the number of men operating.

In the Waterhen Lake District, Waterhen Lake itself shows a marked increase, while other smaller lakes such as Flotten Lake, have decreased considerably, due largely to the fact that fewer men operated.

#### LICENSES

There were 856 Commercial and Fishermen Licenses issued during the year. This is an increase of 62 over the previous year, due to some extent to the adverse crop conditions in the Province during the fall of the year.

#### EQUIPMENT

The total value of all equipment used during the year in connection with the Commercial Fisheries was \$95,694, an increase over the previous year of \$12,967. There is an increase shown of 774 gill-nets valued at \$9,474 due largely to the increase in fishermen and as well to the increased number of Commercial Fishery Licenses issued. There is also an increase of 25 hoop-nets valued at \$500, all on the Saskatchewan River. There is an increase of three smoke houses valued at \$3,750—reports show that eight new smoke houses were constructed on Peter Pond Lake, valued at \$4,400, while two on Makwa, two on Turtle and one on Okemasis Lakes were not used during the year. There is also an increase shown of four gasoline boats and an increase in value of \$300. One of these was on Des Isles Lake, one on Jackfish Lake, one on Dore Lake and one on Long Lake, while there was a decrease of one on Makwa Lake. There is a decrease of one pier, four icehouses, sixteen row boats and 49 lines.

#### DOMESTIC FISHING

There has been a total catch during the year under Domestic net fishing of 15,329 cwt. of fish. This is a decrease of 254 cwt. from the previous year. There has been an increase shown of 377 cwt. of whitefish and 522 cwt. of tullibee and a decrease of 5 cwt. of trout, 171 cwt. of pickerel, 598 cwt. of pike, 179 cwt. of mullets, 258 cwt. of mixed fish; 24 cwt. of goldeyes and 18 cwt. of sturgeon.

The average catch per fishermen was 1,611 pounds, as compared with 1,604 the previous year, and 1,571 during 1924.

There were 952 Domestic Licenses issued, a decrease of 8 from 1925.

## ANGLING

There is an estimated total catch of fish by anglers during the year of 26,915 cwts. This is an increase over the previous year of 2,587 cwts. Of this increase pickerel shows 1,287 cwts., pike 875 cwts., perch 101 cwts., goldeyes 132 cwts., trout 5 cwts., and mixed fish 187 cwts. The principal increases in pickerel were in the districts of Wakaw and Long Lake; pike in Red Deer Lake and Wakaw Lake districts, Long Lake district, Devil's Lake district, and in the Qu'Appelle Lakes, perch in Jackfish and Long Lake districts, and goldeyes in the Saskatchewan Rivers.

The average catch per angler during the year was 60 pounds as compared with 62 pounds during the previous year and 63 pounds during 1924.

There has been a gradual restriction of the use of nets in all the smaller lakes as they become more accessible to the angler due to better roads being constructed to them.

There is an estimated number of anglers shown as 44,914. This is an increase of 5,232 over the previous year and is not confined to any particular district, but appears to be general throughout the province. The average angler, who at one time fished for all the fish he could catch, is gradually becoming a sportsman. This is seen in the better quality of rods, and better and lighter tackle being used.

During the year 286 special angling permits were issued to non-residents. This shows a decrease of 207 from the previous year, but is to be almost fully accounted for by the increase in the number of angling permits issued by the Forestry Branch, who have in many instances the same persons issuing their permits this year as this Department have had in the past few seasons.

## OBSERVANCE OF REGULATIONS

During the year there were 87 prosecutions and a conviction was secured in all cases, resulting in fines amounting to \$491 being imposed with additional court costs of \$308.55, as follows:—

Fishing during close season.....	47
Fishing without a license.....	14
Fishing with illegal apparatus.....	12
Illegal possession of fish.....	6
Fishing to excess.....	3
Offering fish for sale under domestic license.....	3
Obstructing streams.....	1
Failing to tag nets when in water.....	1
	<hr/> 87

There were also 56 confiscations made during the year, as follows:—

Illegal apparatus.....	18
Illegal caught fish.....	17
Legal apparatus.....	21
	<hr/> 56

There were 44 sales of confiscated articles made amounting to \$291.33.

## FISHWAYS AND DAMS

Minor repairs were carried out to the Cowan River dam and the matter of installing new fishways in the dams at Gravelbourg and Swift Current are under consideration. A number of dams in the Qu'Appelle valley were inspected by Mr. Bruce, Fisheries Engineer, during the year, with a view of installing more efficient fishways. A number of small dams in the Cypress Hills area,

where trout have been recently planted, were investigated and the matter of providing a passage of fish has been arranged with the owners, as well as the screening of some of the irrigation ditches.

EXAMINATION OF WATERS

During the year there were 39 waters inspected to determine their suitability for fish life.

REPORT OF R. T. RODD, INSPECTOR OF FISHERIES, PROVINCE OF ALBERTA, FOR 1926

The year 1926 has been a record one in every way. Prices were exceptionally good and the production in most of the large lakes heavy. There has been a keen competition for fish from this province both from New York and Chicago and other eastern markets, and the local demand has also increased. Fish are being marketed in better condition and greater care has been taken in packing the fish to suit the market requirement. A very large increase in the number of anglers will be noticed from the issue of angling permits. Details of my report are as follows:—

INCREASES

Increases in weights.. . . .	1,105,600 pounds
Increases in value .. . . .	\$290,572

The limit was obtained for whitefish at Lesser Slave lake and lac la Biche, the former lake recording a large increase through the addition of Buffalo Bay lake, which joins Lesser Slave lake and which contains nothing but coarse fish. Both pike and pickerel were plentiful, the former being shipped filleted. Good prices were obtained. Increases may also be noted in lac Ste. Anne where a particularly good class of whitefish was obtained this year. This lake a few years ago was claimed to be depleted, and was only fished lightly. Good catches have been obtained, however, for the last two years from this lake; this being chiefly due to a large decrease in coarse fish from an adjoining lake—lake Isle, which has a connecting river to lac Ste. Anne. Particularly gratifying was the experiment conducted at lake Athabasca. Close to 350,000 pounds of fish, 50 per cent being trout and averaging four to five pounds each, were caught and marketed from this lake, the fish reaching the market in good condition. With this season's experience the company has decided to enlarge their operations next year, and are building several new ice houses. At the present time ice houses have been built at Fort McMurray and Fort Chipewyan. The company operating states that there is a very large body of fish to be found in this lake. Beaver lake, near lac la Biche, was also fished heavily, producing 75 per cent jumbo whitefish of a particularly good class and for which big prices were paid.

Winter fishing on the whole was only fair, with the exception of Winaifred lake which produced nearly 600,000 pounds of whitefish, and which is claimed by the overseer of the district to be the most productive piece of water in the province. As high as 175 fish were caught in one hundred yards of net. The fishing at Pigeon lake was good, but the fish are too small and difficulty is now arising in marketing fish from this lake. Cold and Primrose lakes were steady in production.



## DECREASES

The Peter Pond Lake District is under the administration of the Inspector for Alberta, but the statistics are included with those for the province of Saskatchewan as the lakes are located in that province.

The decrease to be noted in the Peter Pond group of lakes is chiefly owing to the fact that one of the companies operating at this lake discontinued operations. Further owing to the demand for fresh fish difficulty arose in marketing the frozen fish of the previous winter, and the companies operating at Peter Pond lake stopped fishing early. According to this winter's operations fishing has been quite as good as in former years, and it is not considered that these lakes are in any way depleted. Discontinuance of summer fishing at Cold Lake, owing to the amount of angling carried on, and poor fishing at lake Wabamun, Buck lake (Township 61), Trout and Peerless lakes, and lake Isle, were responsible for the chief decreases. The poor fishing was chiefly attributable to the scattering of the fish, and over fishing in former years, as well as the increase in water levels through the wet summer season of 1926. This was particularly so at lake Wabamun, where the water level was much higher than in former years, and it is thought that the fish have changed their feeding grounds in consequence. I look for a good season on lake Wabamun this summer.

## MARKETS

The keenest competition in years was evinced during the past year, buyers from the east having been stationed here most of the year. Good prices were obtained for all classes of fish, and I believe that markets are even being canvassed for the shipment of suckers. The average price for whitefish was around ten cents to the fishermen, the same price being obtained for pickerel and perch. Trout averaged eight cents and pike five to seven. The shipment of fresh fish in the winter season continues to increase. This winter, however, there was a distinct shortage of the frozen variety, the demand being good and prices good.

## TRANSPORTATION

Transportation facilities have been excellent, the Express Companies doing their utmost to get business, and no difficulty occurred in securing enough express cars. In fact the outlook from this source is the best in years. Trails and roads were cut into Isogun and Hash lakes, but the same have not proved a success so far. Enough snow and cold weather have made trails this winter excellent. In fact from Peter Pond lake the fish commenced to be shipped out in the first week of the season, which has never been the case before. The great improvement in the highways of the province, many roads being gravelled, has made it possible for motor transport to be used for the transportation of fish from a number of lakes to the railroad. This also makes it much more convenient for anglers, as it is now possible with this improvement to the highways for them to reach nearly all the fishing streams or lakes in the province by motor car, which partly explains the large increase in the sale of angling permits.

## EQUIPMENT

Still greater improvement in equipment, both in nets and ice houses, may be observed. Boxes have been more carefully packed, the catch standardized, and at lake Athabasca new large ice houses have been built together with one large scow capable of moving 20,000 pounds of fish. The United Fisher-

men of Faust are building a refrigerator plant at Faust which will handle filleted pike, etc. The present refrigerator plant owned by the Menzies Fish Company was operated to capacity and has proven a decided success. The fine thread being used by the Pigeon lake fishermen has proved a detriment to the lake and is chiefly the reason for the heavy production of small sized fish. Recommendations have been made with a view to remedying this. More cottages and motor boats are being built at Cold lake for the accommodation of anglers.

## OBSERVATION OF THE REGULATIONS

The number of prosecutions for the year 1926 numbered 99, and the confiscations numbered 64. In addition three other confiscations were procured in the Brazeau Forest Reserve not yet reported. An enormous increase is evident in the issue of licenses. To date the sale of licenses, angling permits, etc., is as follows:—

Commercial and fisherman's.....	1,520
Domestic licenses.....	156
Angling permits.....	5,664
Indian and half breed permits.....	902
Total.....	8,242

An increase over 1925 of over 1,600, and over 1924 of 2,800. It is apparent that revenue collected this year should pay the expenses of this office, this for the first time in the history of this province. Much valued assistance was given both in stocking lakes and in assisting in the observation of the Regulations by the undermentioned clubs:—

1. Northern Alberta Fish and Game Protective League.
2. Claresholm Fish and Game Association.
3. Coleman Rod and Gun Club.
4. Lethbridge Rod and Gun Club.
5. Calgary Angling Association.
6. McLeod Angling Association.
7. Pincher Creek Angling Association.
8. High River Angling Association.
9. Bellevue Fish and Game Protective League.

This office also received assistance from the fifty-eight honorary guardians. There were also employed in a temporary capacity six special fishery guardians. Details of prosecutions are as follow:—

- 29 fishing in close season contravening sections 21 and 33.
- 16 using illegal mesh contravening section 17.
- 15 fishing without permit contravening section 32 (a).
- 8 fishing without license contravening section 1.
- 7 having undersized fish contravening section 34.
- 6 using illegal apparatus contravening section 29.
- 6 fishing in closed waters contravening section 24 (c).
- 6 fishing with excess nets contravening section 7.
- 2 fishing in Lake Minnewanka contravening section 3 (Dominion Parks).
- 1 possession of fish in close season contravening section 29.
- 1 fishing with illegal apparatus (trap) contravening section 31.
- 2 fishing with gang of hooks contravening section 36.

Total 99

Of the above number 20 prosecutions were obtained by forest rangers and park wardens in the forest reserves and within the Rocky Mountains National park.

## IRRIGATION SYSTEMS

There has been very little loss or destruction of fish reported in the numerous systems throughout the province during the past season. The only report received being the loss of suckers and pike left stranded at the outlet of Chin

Lakes reservoir, on the Canadian Pacific Railway southern Alberta irrigation system. On the other hand the reservoirs have furnished excellent angling for pike.

#### DAMS AND FISHWAYS

A new fishway was installed in the Alberta and Great Waterways Railways dam in the Redwater creek at Opal. Permission has been granted Mr. A. P. Stoppe, of Cold Lake, Alberta, by the Water Power Branch of the Department of the Interior to erect a three-foot dam in Marie creek, near the outlet of Marie lake. A fishway will be installed in this dam. A dam and fishway is also being installed by the Canadian Pacific Railway in the Vermilion river near Hazel-dine, Alta. All other dams and fishways previously installed were kept in good repair during the season.

#### EXAMINATION OF LAKES AND STREAMS

During the season twenty-six lakes were examined with a view to stocking and seven barren lakes were found suitable. While four were found sufficiently well stocked with suitable fish the balance were found to be unsuitable for stocking for various reasons. Adult perch were transferred to three lakes from lac la Nonne. During the early spring a number of bass were procured by the Northern Alberta Fish and Game League and liberated in lac la Nonne. Owing to continued bad weather and the poor condition of the roads this work could not be extended.

#### ANGLING

There has been a large increase in the number of anglers at Cold lake last season over that of the previous year. The total amount of fish taken at Cold lake on 643 angling permits issued was 42,370 pounds of trout, 120 pounds of pickerel, and 1,200 pounds of jackfish. The largest specimens taken were: trout, 35 pounds; pickerel, 16 pounds; pike, 24 pounds.

This lake is becoming well known throughout the Prairie Provinces, as well as the Western States, and will eventually become a noted fishing resort.

Angling for rainbow trout and Rocky Mountain whitefish is gradually improving in the tributaries of the Athabasca and McLeod rivers, in the Edson district. Several reports of large catches were received. Excellent angling was also reported throughout the southern part of the province. This was exceptionally so in the Highwood river. Numerous anglers have informed me that fishing in this stream was never known to be as good as it was during the last season. One angler took from one pool in one day's fishing five cutthroat trout of a total weight of twenty pounds. Good catches of rainbow trout, weighing from one to one and one-half pounds, are now being taken in this stream.

Angling for pike, pickerel and perch was also good in the numerous lakes throughout the province.

The several lakes formed by the various irrigation systems have added greatly to the pike fishing in districts where scarcely any fish could be obtained before. Since the dam and screens were installed in the outlet of Sylvan lake some three years ago to prevent the pike from escaping at spawning time, the fishing in this lake has also improved greatly. The pike found in this lake are of an exceptionally fine quality and flavour. Good angling for Arctic grayling can be obtained in the numerous streams flowing into Lesser Slave lake. A government highway is under construction from Athabasca to the Peace river, which will make this fishing accessible to motorists in the near future.



## REPORT OF CHIEF INSPECTOR MAJOR J. A. MOTHERWELL, WESTERN FISHERIES DIVISION (BRITISH COLUMBIA) FOR 1926

## SALMON

The pack for the year totalled 2,065,185 cases of all varieties which is a record one for British Columbia. The average pack during the past five years was 1,633,063. The quantity of salmon taken during recent years has increased very largely, not due to there being a larger supply available, but owing to the favourable market conditions for the fall varieties, which has resulted in extremely intensive fishing. It is only within recent years that the pinks and chums have been in strong demand and the increase in the quantities of these varieties packed has caused the large totals.

The sockeye, which is the most valuable species, shows a pack of 336,995 cases, which is fairly well up to the average although some sections were not as productive as was anticipated.

On the Naas river the total was only 15,929 cases and only a limited quantity reached the spawning areas.

In the Skeena River district the total was 82,357 cases which was fairly satisfactory in view of the runs occurring in the brood years, the pack in 1921 being the smallest on record for the Skeena area although 1922 showed a total of 100,615 cases. The Skeena run is composed chiefly of four and five year fish.

The pack of sockeye actually caught in the rivers and Smiths Inlet district amounted to 89,866 cases and in view of the quantities captured in the brood years of 1921 and 1922, the 1926 total was not at all unsatisfactory and the spawning grounds were found to be well seeded.

The quantity taken in the Fraser river was unusually large in view of the experience since 1917. The average pack during the years 1921 to 1925 was 36,358. That of 1926 totalled 83,589 cases.

Usually the fishermen on Puget Sound on the American side take approximately 75 per cent of the sockeye running to the Fraser river. This year, however, the Puget Sound total was only 44,673 cases. Taking the total pack on the Fraser river and that on Puget Sound, the quantity is 128,262 cases and considered in that way is not encouraging. The unusually large pack put up on the Fraser was due entirely to a late run which arrived during the last of September and the first of October and only a very small fraction of which was taken on the American side. Had the usual proportion been captured in Puget Sound the pack on the Fraser would have been a different story.

It has been suggested that this late run approached the Fraser river from the north by way of Seymour Narrows which would account for the small percentage entering the traps to the south of the International boundary. This is a point, however, on which there is no unassailable evidence.

In the case of the cohoes the total taken in 1926 was a fair average for recent years.

The pink pack amounted to 772,992 cases. The largest previous pack was in the year 1924 when it amounted to 657,561 cases. A large factor in this total was the catch on the Queen Charlotte Islands where the run in the even years is very large particularly in the Masset Inlet district, the quantity taken at that inlet totalling close to 200,000 cases.

The pack of chums totalled 701,971 cases which far exceeds the catch of the next largest year which was 1925 with a total of 607,904 cases.

With the greatly increased quantity of fishing equipment in the water and particularly purse-seines, the time would seem to have arrived when the Department must go to considerable lengths with a view to the conservation of the salmon. One of the great difficulties is in properly protecting the mouths of

streams. If the numerous small seines which have operated during the past two years and which are increasing each season can be eliminated it will be of very material assistance but it would seem to be necessary to go even farther and it may be found imperative in the very near future to also prohibit all drag-seine operations. With the development of more efficacious fishing methods it is now possible to take the salmon considerable distances out from the streams to which they are heading for spawning purposes and the tendency in the administration of the regulations should be in the future to continue the extension of the boundaries in order to confine the seining operations to areas quite distant from the spawning streams and where in addition a better class of fish would be taken. The gill-net operations which are confined largely to the sockeye fishing can be very readily controlled and we have every justification to feel that conservation of the sockeye will be properly looked after.

#### HALIBUT

There were 315,095 cwts. of halibut landed in British Columbia during the year. This shows a decrease of 3,145 cwts. from the previous season and is the smallest total since 1922. It is interesting to note that the reduction was altogether in the quantity landed by American vessels, the quantity landed from Canadian bottoms showing a slight increase. On the whole the fishermen had a successful season as the prices during the year were good. The Canadian fishermen, however, still feel the handicap of the 2-cent tariff in favour of the Americans and this is the cause of considerable dissatisfaction.

Another source of friction during the past few seasons is the lack of observance on the part of the foreigners of the boundary between British Columbia and Alaskan waters. While the boundary shown on the charts is enforced by the American patrol boats, Alaskan fishermen are permitted to come south of this line and compete with Canadian boats in what the Canadians feel are their own waters. It is hoped that in fairness to Canadian operators this boundary question will speedily be settled.

#### HERRING

The annual report covers the calendar year whereas the herring season runs through the fall of one year well into the spring of the following one. In this way the report necessarily deals with a portion of each of two runs.

The dry salt pack amounted to 938,647 cwts. which is the second largest on record but 144,527 cwts. smaller than the preceding season. This reduction is partly accounted for no doubt by the existing conditions in China, which is the market for the dry salted product. Weather conditions also have a very considerable effect on the herring catch and the pack is not always a good criterion of the quantity available.

Employees in the dry salting establishments are now all whites or Indians apart from two executives in each of the few Oriental plants which are left. The seining operations are also conducted principally by whites or Indians although 50 per cent of the crews operating on the east coast of Vancouver island may still be Orientals. In this connection it is interesting to note that now that the owners of herring dry salteries have realized that they must employ others than Orientals they are taking the necessary action in the way of providing better quarters and accommodation generally for the whites and Indians.

#### WHALING

Two whaling stations only operated during the year, these being the Rose Harbour and the Naden Harbour stations, both situated on the Queen Charlotte

islands. The total of 269, as per the following statement, shows a considerable falling off from recent seasons:—

—	Sperm	Sulphur	Fin	Hump	Sei	Right	Total
Rose Harbour.....	64	11	91	21	24	.....	211
Naden Harbour.....	16	3	33	4	1	1	58
Total.....	80	14	124	25	25	1	269

#### FUR SEAL SKINS

As a result of the privileges extended to the Indians of the province under the Pelagic Sealing Treaty, 2,824 fur seals skins were taken as follows:—

Vicinity of Queen Charlotte islands.....	239
Vicinity of Bonila island.....	416
Clayoquot Sound district.....	633
Barelay Sound district.....	1,536
Total.....	2,824

In the seasons 1925 and 1924 the totals were 4,465 and 2,232 respectively. No doubt the bad weather during 1926 and the smaller demand for fur seal skins had considerable to do with the decreased number taken. The average price for the season under review was \$8 per skin to the hunter.

#### DESTRUCTION OF SEA LIONS

Sea lion hunting operations were conducted under considerably more favourable weather conditions. The crew of the C.G.S. *Givenchy* supplemented by an expert machine gunner, accounted for 711 pups and 1,245 adults, a total of 1,956, as against 2,827 during the season 1925. The first landings were made on both the Pearl and Virgin rocks on June 9 and the final raid on June 19. The smaller quantity of these mammals found on the rookeries during the expedition would appear to show the result of the previous years' hunts. The adults were not so numerous and the killing of the large number of pups in the preceding year was evidenced by the lack of yearlings in 1926. It is, however, a fact that there were a considerable number of two-year-olds but these may have come from other colonies.

There was again much evidence of the satisfaction of those interested in the actual fishing operations. Undoubtedly the number of lions in the Rivers Inlet district during the fishing season has been considerably reduced.

As an evidence of the hazardous nature of these hunting operations which are carried on on the bare low rocks exposed to the full sweep of the Pacific, I would mention that a member of one of the landing parties on the Virgin Rocks was swept off the rock by a big wave but very fortunately was able to scramble back again. He was again washed off, however, before he could be taken aboard the launch.

With a view to the utilization of the hides, samples were brought back by the hunters and were handed to a local tannery. Nothing, however, came of this effort.

#### PATROL SERVICE

The service requires more permanent officers in the way of Overseers who, owing to their permanency, would undoubtedly take considerably more interest in their duties. Some of the sub-districts at present are so large and the operations conducted therein so intensive as to make it impossible for the



present permanent staff to give them the necessary close attention. Unfortunately the salaries paid to Overseers is, particularly in the north, so inadequate as to be unattractive to most good men. Much better pay can usually be obtained in other occupations. The efforts looking to conservation must keep pace with the increased intensive fishing and unless employment in the fisheries service is made sufficiently attractive from a standpoint of salary and unless the administration in British Columbia can be provided with the necessary facilities in the way of air service and efficient patrol boats, it is going to be impossible to conserve the sea products.

Unfortunately seaplanes were not available to assist in the protection of the fisheries during the year and this handicap was very keenly felt. While 91 power boats and 18 rowboats were employed together with 16 Overseers, 80 patrolmen and 28 guardians, undoubtedly the fisheries did not receive sufficient protection. If the desired results could be obtained by merely employing more boats and more men such an arrangement could be made but it is felt that particularly owing to the class of boats and men which are available any considerable increase would be a waste of money. There are large isolated districts without any means of communication or obtaining supplies but where salmon are plentiful. In these areas it would be utterly useless to attempt to take care of the situation by means of boats and guardians. The only adequate protection is by means of seaplanes both from the standpoint of results and also of economy. It is felt that unless this arm of the Service can be made available for future seasons it will be absolutely imperative to so restrict the operations of the fishermen as to seriously affect the cost of production.

The *Malaspina* in the course of the year logged 17,127 miles and the *Givenchy* 13,906. Fifteen of the smaller boats each logged over 5,000 miles.

The *Givenchy* was again used for several weeks for life-saving duties at a time when she should be undergoing annual overhaul in order to be available for the patrol of the halibut fisheries before the expiration of the closed period.

#### REGULATIONS

Owing to the anticipated intensive fishing in the sockeye gill-net areas in the north, those interested were, well in advance of the fishing season, informed if the number of salmon gill-net licenses issued for the several areas reached a figure at which the weekly closed period of 48 hours was felt to be inadequate, such close season would be increased. A definite number of licenses was decided upon as the dividing line in each district and this information was placed in the hands of those interested early in order that they would know definitely what to expect. Only in the Dean Channel, Fitzhugh Sound, Rivers Inlet, and Smiths Inlet areas was it found necessary to increase the weekly closed time and in each case nine additional hours were added.

One great menace to the salmon fisheries of the province, particularly the fall varieties, is the huge increase in the number of salmon purse-seines operating. This has increased from 92 in 1912 to 445, including transfers, in 1926. Previous to the year 1923 it was not possible to transfer a license from one of the 21 purse-seine areas to another but it was necessary to pay another license fee. In 1922 this amounted to \$300 in the case of salmon purse-seines plus  $\frac{1}{2}$  cent per fish caught. In 1923 the license fee was reduced to \$20 and licensees were permitted to transfer from one district to another without cost. In 1922 the number of salmon purse-seine licenses issued was 143. The following year with the license fees reduced, the number increased to 223 although with the privilege of transferring from one district to another. Conditions would be sufficiently bad were the nets all of large size but during recent

years, the last two particularly, fishing with small seines from 60 to 80 fathoms in length and from 3 fathoms in depth has developed, which places in the hands of anyone so inclined an instrument which can be used very readily in prohibited areas and in fact is only a temptation to fish where no operations are or should be permitted, inside the boundaries and inside the creeks where the fish are schooled up waiting for the proper water conditions before ascending to their spawning grounds. These nets are carried on boats as small as 30 feet in length. With this sized craft it is a simple matter to operate in shallow waters.

It will be observed that this year's salmon pack is the largest in the history of the industry but the increase is in those varieties of salmon which are taken by means of purse-seines. There is a point beyond which no run of salmon can be fished if any regard is to be had for the future supply. While no authority is yet in a position to determine just where the dividing line lies, at the same time we must be on the safe side and even possibly at the expense of considerably curtailing the pack, safeguard the supply.

It has been contended that the limiting of the size of purse-seines would eliminate the small man and take from him his means of making a living. The obvious reply to this argument is that unless the intensive fishing done in the manner employed by many of these small seines is not made impossible it will only be a short time before there will not be a sufficient quantity of salmon to support even the small man and the elimination of the small purse-seine is undoubtedly in the interests of every fisherman.

#### POWER BOATS IN SALMON GILL-NET FISHING, DISTRICT NO. 2

During the year 1926, out of a total of 3,423 salmon gill-nets fished in District No. 2, six hundred and thirty were with the use of power boats. It will be remembered that this equipment was not permitted up to and including the year of 1922.

#### CLEARING OF OBSTRUCTIONS IN SALMON STREAMS

While no work of a very extensive nature was undertaken during the year in the way of clearing of obstructions, the usual examination of the streams was made and many small obstacles removed and the spawning grounds and their approaches considerably improved. In the immediate future, however, considerable expenditure is contemplated in the very necessary work of building a fishway at Stamp River falls, improving the present one in the Fraser River at Bridge River canyon, and also in connection with the investigation of conditions at Hells Gate. The detailed report of the Resident Engineer will be found in another place.

#### UNNATURALIZED WHITE RESIDENT FISHERMEN

The regulations require that no one shall receive a fishing license unless he is a British subject with the exception that bona fide settlers to whom special consideration is given. It was found that many desirable white men from European countries with fishing experience, were migrating to this country and were desirous of taking up fishing for a living. On satisfactory evidence being produced to the effect that these men would become British subjects as soon as by law this would be permitted, they were given fishing licenses. The number of men to whom licenses were so issued was 414. These fishermen were largely employed to fill the vacancies created by the reduction in Orientals. As a rule they were found to be very satisfactory and many of them have themselves invested in boats and nets. Great care is taken, however, to see that this privilege is not abused particularly from a standpoint of the migrant who ultimately intends to reside in another country but who, owing to the



quota being full, remains in Canada for a few months only and desires to take up fishing until the quota is reopened. Also licenses are refused to subjects from another country who may wish to fish during the summer time in British Columbia waters but with the intention of returning to their own country each season immediately after the fishing operations are over.

#### MEETING OF OVERSEERS

The annual meeting of the Inspectors and Overseers was held in March at the office of the Chief Inspector. Undoubtedly the opportunity of meeting and discussing the numerous problems in connection with the administration of the Fisheries is of immense value and is so demonstrated more and more each year.

#### FISH MEAL AND OIL OPERATIONS

There were 23 licenses issued for reduction works plants during the season. All but two of these were for establishments on Vancouver Island and all but four were issued for plants on the west coast of the island. Fourteen of these actually operated. This large increase in the last two seasons was due to the permission to utilize pilchards. These fish run in very large quantities on the west coast although their movements are very irregular which adds something of a speculative nature to the character of the operations of these plants. Pilchards cannot be utilized for dry salting as is the case with herring and the market for the canned product is up to the present at least very limited, whereas on the other hand the demand for fish oil and meal has been found attractive.

In the past the seiners have waited for the pilchards to come into the several sounds where they were fairly easily taken when found. An attempt was made, however, in 1926, to, by the use of larger and better equipment, seine these fish on the outside in the exposed waters of the Pacific. The results, however, were not encouraging as although the fish can be found in large quantities there is great difficulty in seining due to weather conditions.

Herring had not been permitted to be used in British Columbia for the purposes of the manufacture of fish meal and oil until January 15, 1925, when this permission was extended to Districts 1 and 2. This omitted Vancouver Island where the bulk of the herring in the past have been caught. No one in Districts 1 or 2 has yet taken advantage of the opportunity to put the herring through their meal and oil plants but on the west coast of Vancouver Island permission was last fall given to those operating between Clayquot Sound and the north end of Vancouver Island to, until the end of the calendar year, use herring. Only 2,000 tons were used and apparently the operators found little encouragement to continue at that time, claiming that the bulk of the herring were available in the first two months of the year and that it was only at that time that their operations could be profitable.

The total quantity of fish oil and meal produced in the Province during the year was 9,694 tons of meal and 2,129,571 gallons of oil, that from pilchards only being 7,948 tons of meal and 1,898,721 standard gallons of oil. Most of the oil has been shipped to the United States or direct to the Old Country but the meal has been largely marketed in Japan.

#### GENERAL

One interesting development during the past few seasons is the increase in the employment of white labour in the salmon canneries. This applies principally to the employment of white girls who are replacing more and more each season the Indians and Orientals at the filling tables. Another feature of interest is the increased attention which is being paid by the canneries to cleanliness and sanitary conditions generally.



STATEMENT No. 1

WHOLE PROVINCE—1876 TO 1926

Year	Num-ber of can-nies oper-ated	Number of salmon licenses issued					Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Chums	Totals	
		Number of salmon licenses issued															
		G.N.	Troll	P.S.	D.S.	T.N.											
1876.....	3	Particulars not available.					“	“	Particulars of varieties not available—practically all sockeye.							9,847	
1877.....	4	“	“	“	“	“	“	“	“	“	“	“	“	“	“	67,387	
1878.....	10	“	“	“	“	“	“	“	“	“	“	“	“	“	“	113,601	
1879.....	9	“	“	“	“	“	“	“	“	“	“	“	“	“	“	61,093	
1880.....	9	“	“	“	“	“	“	“	“	“	“	“	“	“	“	61,849	
1881.....	12	“	“	“	“	“	“	“	“	“	“	“	“	“	“	177,276	
1882.....	18	“	“	“	“	“	“	“	“	“	“	“	“	“	“	255,061	
1883.....	24	“	“	“	“	“	“	“	“	“	“	“	“	“	“	196,292	
1884.....	17	“	“	“	“	“	“	“	“	“	“	“	“	“	“	141,239	
1885.....	9	“	“	“	“	“	“	“	“	“	“	“	“	“	“	108,517	
1886.....	17	“	“	“	“	“	“	“	“	“	“	“	“	“	“	161,264	
1887.....	20	“	“	“	“	“	“	“	“	“	“	“	“	“	“	204,083	
1888.....	21	“	“	“	“	“	“	“	“	“	“	“	“	“	“	181,040	
1889.....	28	“	“	“	“	“	“	“	“	“	“	“	“	“	“	414,294	
1890.....	32	“	“	“	“	“	“	“	“	“	“	“	“	“	“	408,978	
1891.....	26	“	“	“	“	“	“	“	“	“	“	“	“	“	“	314,893	
1892.....	27	“	“	“	“	“	“	“	“	“	“	“	“	“	“	228,470	
1893.....	37	“	“	“	“	“	“	“	“	“	“	“	“	“	“	590,229	
1894.....	32	“	“	“	“	“	“	“	“	“	“	“	“	“	“	494,371	
1895.....	36	“	“	“	“	“	“	“	“	“	“	“	“	“	“	566,395	
1896.....	47	“	“	“	“	“	“	“	“	“	“	“	“	“	“	601,570	
1897.....	54	“	“	“	“	“	“	“	“	“	“	“	“	“	“	1,015,477	
1898.....	51	“	“	“	“	“	“	“	“	“	“	“	“	“	“	484,161	
1899.....	59	“	“	“	“	“	“	“	“	“	“	“	“	“	“	732,437	
1900.....	64	“	“	“	“	“	“	“	“	“	“	“	“	“	“	585,413	
1901.....	73	“	“	“	“	“	“	“	“	“	“	“	“	“	“	1,236,156	
1902.....	66	“	“	“	“	“	531,436	Springs and Fall:				94,546	625,982				
1903.....	59	“	“	“	“	“	Particulars of varieties not available—practically all sockeye.							473,674			
1904.....	51	“	“	“	“	“	323,226	35,421 (Red & Wh. Springs)				Fall: 107,247				465,894	

1905.	67	"	"	"	1,030,673	28,359 (Red & Wh. Springs)			44,458	13,970	1,167,460
46122-5	1906	"	"	"	459,679	31,261	1,083		69,132	68,305 (Pks. & Ch.)	629,460
	1907	"	"	"	314,074	23,159	2,939		87,900	118,704 (Pks. & Ch.)	547,459
	1908	"	"	"	355,023	25,433	2,731		81,917	76,448 (Pks. & Ch.)	542,689
	1909	"	"	"	840,441	18,218	799		61,918	46,544 (Pks. & Ch.)	967,920
	1910	"	"	"	565,915	19,313	9,476		74,382	34,613	58,362
	1911	"	"	"	383,509	38,751	9,705		119,802	305,247	91,951
	1912	3,640		92	444,762	62,345	18,092		165,309	247,743	58,325
	1913	4,782		74	972,178	37,433	3,616		69,822	192,887	77,965
	1914	4,857		61	536,696	32,908	16,420		120,201	220,340	184,474
	1915	4,951		61	476,042	51,734	6,370		146,556	367,352	82,000
	1916	4,600		80	214,789	51,231	15,495	3,096	183,623	280,644	240,201
	1917	5,286	1,370	99	339,848	48,630	27,646	(11,740 (BB. & SH.)	157,589	496,759	475,273
	1918	5,073	1,786	122	276,459	65,555	41,819 (Pk. & Wh.)	(15,916 (BB. & SH.)	191,068	527,745	497,615
	1919	4,598	2,260	139	369,445	73,179	9,077	24,323	175,670	346,639	372,035
	1920	4,761	1,855	155	351,405	95,983	8,441	8,061	101,972	520,856	84,626
	1921	4,777	1,452	59	163,914	36,725	6,061	7,060	117,288	192,906	71,408
	1922	4,491	1,513	143	299,614	21,163	11,913	6,431	102,845	581,979	258,204
	1923	3,957	1,446	223	334,647	17,539	4,858	7,097	112,044	440,932	418,055
	1924	3,696	1,553	242	369,601	18,741	2,591	4,267	115,944	657,561	570,497
	1925	4,225	1,821	329	392,643	39,142	4,419	10,675	188,505	445,400	607,904
	1926	4,750	2,416	445	336,995	41,232	4,201	19,445	162,448	772,992	701,971
											2,065,188

NOTE.—Licenses issued 1923, 1924, 1925 and 1926 include transfers from one district to another.

PACK OF CANNED SALMON ON THE NAAS RIVER—1876 TO 1926

Year	Num-ber of can-eries oper-ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Chums	Totals
		G.N.	Troll	P.S.	D.S.	T.N.									
1876															
1877															
1878															
1879															
1880															
1881	1						Particulars of varieties not available—practically all sockeye.								7,700
1882	2						"	"	"						16,100
1883	2						"	"	"						20,383
1884	1						"	"	"						8,500
1885															
1886															
1887															
1888	1						Particulars of varieties not available—practically all sockeye.								12,318
1889	3						"	"	"						19,410
1890	3						"	"	"						23,906
1891	3						"	"	"						10,323
1892	3						"	"	"						25,434
1893	3						"	"	"						15,190
1894	1						"	"	"						19,587
1895	1						"	"	"						19,550
1896	1						"	"	"						14,649
1897	1						"	"	"						20,847
1898	1						"	"	"						18,953
1899	1						"	"	"						19,443
1900	1						"	"	"						18,238
1901	1						"	"	"						14,790
1902	2						20,953 (Other varieties: 2,365)								23,318
1903	1						Particulars of varieties not available—practically all sockeye.								12,100
1904	2						15,000 2,357 (Red and Wh. Spr.)						1,697	31	19,085



1905	3	24,462	3,340 (Red and Wh. Spr.)	.....	.....	3,085	1,840	32,725
46122—51		22,166	858	63	.....	5,997	3,450 (Pk. and Ch.)	32,534
1906	3	17,813	1,288	.....	681	6,093	5,957 (Pk. and Ch.)	31,832
1907	3	27,584	3,263	.....	1,101	8,348	6,612 (Pk. and Ch.)	46,908
1908	3	.....	.....	.....	.....	.....	.....	.....
1909	3	28,246	2,280	57	.....	6,818	3,589 (Pk. and Ch.)	40,990
1910	4	30,810	1,228	11	.....	6,285	895	39,720
1911	3	37,327	3,434	325	140	11,467	5,189	65,684
1912	3	36,037	5,710	1,226	100	12,468	12,476	71,162
1913	3	23,574	2,999	152	.....	3,172	20,539	53,423
1914	4	31,327	2,660	725	.....	9,276	25,333	94,860
1915	4	39,349	3,053	648	113	15,171	34,879	104,289
1916	4	31,411	3,061	784	1,498	19,139	59,593	126,686
1917	4	22,188	3,170	1,326	1,125	22,180	44,568	119,495
1918	6	21,816	2,332	817	1,305	17,060	59,206	143,908
1919	5	28,259	2,408	585	789	10,900	29,949	97,512
1920	5	16,740	3,584	482	560	3,700	43,151	81,153
1921	5	9,364	1,431	437	413	8,236	29,488	51,765
1922	5	31,277	1,466	341	193	3,533	75,687	124,071
1923	5	17,821	2,522	457	42	7,894	44,165	99,580
1924	4	33,590	2,142	327	1,035	6,362	72,496	142,939
*1925	3	20,351	5,441	387	470	8,188	35,880	94,752
†1925	.....	18,945	4,067	392	457	7,726	34,530	89,008
*1926	4	15,929	4,616	751	375	4,274	43,891	85,825
†1926	4	15,929	4,616	397	375	4,274	50,815	92,749

NOTE.—Licenses issued 1926 include transfers from other districts.

NOTE re 1925 and 1926 figures:—\*Pack of fish caught at Naas River regardless where canned.

†Pack at Naas River regardless where caught.

## PACK OF CANNED SALMON ON THE SKEENA RIVER—1876 TO 1926

STATEMENT No. 3

Year	Num-ber of can-neries oper-ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Chums	Total
		G.N. Troll.	P.S.	D.S.	T.N.										
1876.....	1					Particulars of varieties not available—practically all sockeye.	"	"	"	"	"	"	"	"	3,000
1877.....	2					"	"	"	"	"	"	"	"	"	8,500
1878.....	2					"	"	"	"	"	"	"	"	"	10,603
1879.....	2					"	"	"	"	"	"	"	"	"	19,694
1880.....															
1881.....	2					"	"	"	"	"	"	"	"	"	21,560
1882.....	2					"	"	"	"	"	"	"	"	"	24,522
1883.....	5					"	"	"	"	"	"	"	"	"	31,157
1884.....	5					"	"	"	"	"	"	"	"	"	53,986
1885.....	2					"	"	"	"	"	"	"	"	"	12,900
1886.....	3					"	"	"	"	"	"	"	"	"	37,587
1887.....	5					"	"	"	"	"	"	"	"	"	58,592
1888.....	5					"	"	"	"	"	"	"	"	"	70,106
1889.....	6					"	"	"	"	"	"	"	"	"	58,165
1890.....	7					"	"	"	"	"	"	"	"	"	90,509
1891.....	7					"	"	"	"	"	"	"	"	"	78,135
1892.....	8					"	"	"	"	"	"	"	"	"	90,280
1893.....	7					"	"	"	"	"	"	"	"	"	59,675
1894.....	7					"	"	"	"	"	"	"	"	"	61,151
1895.....	7					"	"	"	"	"	"	"	"	"	67,797
1896.....	8					"	"	"	"	"	"	"	"	"	100,140
1897.....	8					"	"	"	"	"	"	"	"	"	65,905
1898.....	6					"	"	"	"	"	"	"	"	"	81,234
1899.....	7					"	"	"	"	"	"	"	"	"	108,026
1900.....	10					"	"	"	"	"	"	"	"	"	128,529
1901.....	11					"	"	"	"	"	"	"	"	"	126,092
1902.....	10					"	"	"	"	"	"	"	"	"	154,875
1903.....	10					"	"	"	"	"	"	"	"	"	98,669
1904.....	11					93,404	20,621 (Red & Wh. Spr.)					10,315	30,529		154,869
1905.....	12					84,717	14,598 (Red & Wh. Spr.)					7,247	7,523		114,085
1906.....	14					86,394	20,138					16,867	38,991 (Pk. & Ch.)		162,420
1907.....	13					108,413	10,378					15,247	25,217 (Pk. & Ch.)		*159,255
1908.....	13					139,846	13,374		468			10,075	45,404 (Pk. & Ch.)		209,177

1909.....	12.....	87,901	11,727	742	12,249	28,120 (Pk.&Ch.)	140,739
1910.....	12.....	187,246	9,546	239	11,531	13,473	222,035
1911.....	12.....	131,066	15,514	2,428	23,376	81,956	254,410
1912.....	12.....	92,498	19,332	4,501	39,835	97,588	254,258
1913.....	13.....	52,927	23,250	3,186	18,647	66,045	164,055
1914.....	13.....	130,166	11,529	211	16,378	71,021	237,634
1915.....	13.....	116,553	15,069	204	32,180	107,578	279,161
1916.....	14.....	60,923	18,372	2,561	47,409	73,029	223,158
1917.....	15.....	65,760	13,586	2,699	38,456	148,319	292,219
1918.....	15.....	123,322	16,013	6,828	38,759	161,727	374,216
1919.....	14.....	184,945	3,624	2,656	36,559	117,303	398,877
1920.....	15.....	90,869	37,403	3,123	18,068	177,679	334,392
1921.....	13.....	40,018	18,596	445	45,033	124,457	234,765
1922.....	13.....	100,615	7,080	1,805	24,673	203,555	362,055
1923.....	13.....	131,731	8,863	1,499	31,967	145,973	338,863
1924.....	13.....	144,732	9,511	1,301	26,907	181,338	390,967
†1925.....	13.....	77,785	17,811	2,457	38,029	127,226	76,362
†1925.....	13.....	81,149	19,185	2,603	39,168	130,083	348,866
†1926.....	15.....	82,307	17,878	1,750	30,153	170,586	350,786
†1926.....	15.....	82,357	17,878	1,750	30,209	210,064	407,515
†1927.....	15.....						

\*Approximately.

NOTE re 1925 and 1926 figures.—†Pack of fish caught at Skeena River regardless where canned. ‡Pack at Skeena River regardless where caught.

NOTE.—Licenses issued 1923-1924, 1925 and 1926 include transfers from other districts.





1908	8	74,452	1,254					9,505	4,679 (Pk. & Ch.)	89,890
1909	8	102,527	1,087					1,400	300 (Pk. & Ch.)	105,314
1910	8	141,921	383					2,075	19	144,398
1911	8	105,763	1,317					8,287	6,411	127,066
1912	8	129,217	1,452					11,095	11,723	158,798
1913	8	79,345	1,589					3,708	4,287	90,944
1914	*7	89,890	566					7,789	5,784	109,052
1915	8	162,651	1,022					7,115	2,864	179,431
1916	9	58,192	1,033					15,314	3,567	112,629
1917	10	75,326	715					9,124	8,065	113,758
1918	10	68,447	957					12,074	29,542	128,937
1918		66,842	967					19,074	29,542	127,332
1919	11	73,754	967					9,038	6,538	110,736
1919		72,072	967					9,038	6,538	109,234
1920	10	142,793	1,537					2,922	26,189	174,938
1920		133,245	1,537					2,922	26,189	165,390
1921	10	50,849	386					4,055	3,055	58,562
1921		49,729	406					4,784	5,836	60,569
1922	10	68,818	216					1,145	24,311	94,990
1922		66,518	216					1,145	24,311	92,690
1923	10	118,502	230					1,526	10,057	133,930
1923		112,350	230					1,526	10,057	127,778
1924	10	91,764	215					1,886	15,103	114,318
1924		201,186	344					4,887	7,675	226,030
1925	11	170,581	215					4,866	8,625	196,132
1925		89,866	535					10,348	14,630	124,341
1926	12	74,629	473					7,448	11,751	108,146
1926										

NOTE.—Figures shown in black are packs from fish caught at Rivers Inlet or Smiths Inlet. Figures in black for years previous to 1918 are actual packs. Figures shown in *italic*, 1918 to 1926, are actual packs irrespective of where fish taken and not including fish shipped out for canning in other districts.

\*1914 figures include Rivers Inlet pack only, no figures being available for Smiths Inlet for that year.

NOTE.—*Re* column. Varieties other than sockeye packed at Smiths Inlet. For the years this column is utilized, figures of the different varieties other than sockeye packed at Smiths Inlet were not available, and had to be shown as a total. Sockeye for these years are shown under their proper heading.

NOTE.—Licenses issued 1923, 1924, 1925 and 1926 include transfers from other districts.





1905	38	2,770	"	837,489	5,507: (Red and White Springs)				30,836	3,304	877,136
1906	24	1,740	"	183,007	6,503				34,413	15,543 (Pk.&Ch.)	240,486
1907	18	1,726	"	39,815	3,448				35,766	63,530 (Pk.&Ch.)	163,116
1908	16	1,374	"	63,126	1,427			18	24,198	415 (Pk.&Ch.)	89,184
1909	38	2,688	"	542,248	1,428				21,540	1,987 (Pk.&Ch.)	567,203
1910	21	1,577	"	133,045	1,018				27,855	128	223,148
1911	15	1,396	"	58,487	7,028				39,740	142,101	301,344
1912	15	1,430	"	108,784	14,655	2			38,574	574	173,921
1913	35	2,560	"	684,596	3,573	2			11,648	9,973	732,059
1914	20	2,656	"	185,483	9,485				38,639	6,057	328,390
1915	22	2,616	"	89,040	15,388				34,114	128,555	289,119
1916	21	2,240	"	27,394	11,096				24,580	840	106,440
1917	29	2,626	"	123,614	10,197				25,895	134,442	377,988
1918	18	1,582	"	16,849	15,192				40,111	18,388	206,003
1919	14	1,337	"	29,628	14,519	1			39,253	39,363	15,718
1920	11	1,288	"	44,598	19,961	1			22,934	12,839	132,860
1921	13	1,437	"	35,900	11,360				29,978	8,178	103,917
1922	10	1,296	"	48,744	10,561				23,587	29,578	137,482
1923	11	964	"	29,423	3,854				20,173	63,645	224,637
1924	9	969	"	36,200	2,982				21,935	31,968	209,050
1925	10	969	"	31,523	7,335				36,717	99,800	272,993
1926	10	1,063	"	83,589	11,703				21,782	32,256	273,129

NOTE.—Licenses issued 1923, 1924, 1925 and 1926 include transfers from other districts.

## STATEMENT No. 6

## PACK OF CANNED SALMON OF PUGET SOUND FROM 1887 TO 1926

Year	Number of canneries operated	Spring	Sockeye	Cohoe	Chum	Pink	Steel- head	Total
1887.....		Particulars of varieties not available.						22,000
1888.....	4	"	"	"	"			21,975
1889.....	2	240		7,480	1,145	2,890		11,674
1890.....	1	1,000		3,000	4,000			8,000
1891.....	2	382	5,538	5,869	3,093	5,647		20,529
1892.....	2	86	2,954	7,206	16,180			26,426
1893.....	3	1,200	47,852	11,812	11,380	17,530		89,331
1894.....	3		41,781	22,418	22,152	9,049		95,400
1895.....	7	1,542	65,143	50,865	38,785	23,633		179,968
1896.....	11	13,495	72,979	82,640	26,550			195,664
1897.....	12	9,500	312,048	91,900	23,310	57,268		494,026
1898.....	18	11,200	252,000	98,600	38,400			400,200
1899.....	19	24,364	499,646	101,387	31,481	252,733		919,611
1900.....	19	22,350	229,800	128,200	89,100			469,450
1901.....		Particulars of varieties not available.						1,380,590
1902.....	21	30,049	372,301	85,817	93,492			581,659
1903.....	22	14,500	167,211	103,450	12,001	181,236		478,488
1904.....	13	14,441	109,264	118,127	49,656			291,488
1905.....	24	1,804	825,453	79,335	41,057	70,992		1,018,641
1906.....	16	8,139	178,748	94,497	149,218			430,602
1907.....	14	1,814	93,122	119,372	50,249	433,423		698,080
1908.....	22	95,210	170,951	128,922	47,607	6,075		448,765
1909.....	11	13,019	1,097,904	143,133	53,688	370,993		1,632,949
1910.....	24	10,064	248,014	162,755	146,942	108		567,883
1911.....	15	21,823	127,761	256,124	104,321	1,046,992		1,557,029
1912.....	20	20,252	184,680	149,727	60,760	700		416,125
1913.....	22	1,234	1,673,099	61,019	56,225	791,886		2,583,463
1914.....	31	26,044	335,230	151,893	278,801	892		792,860
1915.....	41	28,466	64,548	180,783	411,724	583,649		1,269,206
1916.....	32	37,030	84,637	155,832	427,878	1,887		707,278
1917.....	45	57,543	411,538	114,276	216,285	1,124,884		1,921,554
1918.....	32	63,366	50,723	235,860	267,538	6,605	106	624,198
1919.....	35	68,542	64,346	210,883	525,541	421,215	5,076	1,295,626
1920.....	11	25,846	62,654	24,502	48,849	4,669		166,520
1921.....	23	25,567	102,967	89,412	30,831	404,713		653,490
1922.....	16	20,615	48,566	111,711	65,552	2,225		248,729
1923.....	18	15,777	47,402	122,000	97,081	475,849	29	758,138
1924.....	12	19,968	69,369	87,879	134,360	5,945	128	317,649
1925.....	23	28,268	106,064	171,587	41,635	555,848	141	903,543
1926.....		24,763	44,569	120,846	112,411	2,125	63	307,778

## STATEMENT No. 7

## STATEMENT OF HALIBUT LANDINGS—BRITISH COLUMBIA, 1913 TO 1926

	Cwts.
1913.....	223,465
1914.....	214,444
1915.....	194,896
1916.....	123,062
1917.....	113,529
1918.....	186,229
1919.....	210,777
1920.....	238,770
1921.....	325,868
1922.....	293,184
1923.....	334,667
1924.....	331,382
1925.....	318,240
1926.....	315,095

## CONDITIONS ON SPAWNING GROUNDS

*Queen Charlotte Islands.*—In the Masset Inlet area there is a small run of sockeye in May and June which apparently maintains itself each year. This in the past has never been fished to any extent commercially. The fish are of good size. The Queen Charlotte area is not an important one from the standpoint of sockeye. The season of 1926 brought the usual large run of pinks salmon to the Masset area. This occurs only in alternate years and the 1926 run was well up to expectations and although approximately 200,000 cases were packed, an ample supply of spawning fish reached the upper areas. Speaking generally the east coast of the Islands was fairly well seeded with pinks and chums although the former variety were rather late in arriving. On the west coast, however, the spawning grounds were not found to be in such satisfactory condition apart from those streams north of Rennel Sound.

*Naas River.*—The supply of sockeye on the spawning grounds was found to be considerably smaller than the preceding year and even when compared to the brood years the quantity was considered far from adequate. The supply of spring salmon, however, was a satisfactory one although the coho run was practically a failure from the standpoint of the seeding of the spawning grounds.

*Skeena River.*—The run of sockeye to the spawning grounds of Babine Lake, although not as large as some years, was found to be very encouraging and should be amply sufficient to provide a return equal to if not greater than the average. The inspecting officer mentioned particularly the number of runts found amongst the parent sockeye this year. While the appearance of these small fish is not an unusual occurrence, yet indications would seem to point to the fact that during the season 1926 the proportion was greater than usual.

At Lakelse Lake the run of sockeye was a most satisfactory one.

The inspection of the Eestahl River area showed adequate numbers of spawning fish.

Conditions at Shawatlans Creek were found unusually satisfactory and there is no doubt but that the closing of this stream for the sockeye cycle has been the means of restoring the run.

*Central Division.*—Taking this district as a whole the spawning conditions were found to be encouraging. There was some fear at the commencement of the season that owing to the conditions of the streams there would not be sufficient water to permit the fall varieties particularly to pass up but at the time the salmon arrived the rain also came and permitted the salmon to make the ascent easily. The Inspecting officer feels that the spawning grounds are better seeded this season than for four years at least. This applies to sockeye, pinks, chums, and cohoes.

*Bella Coola and Kimsquit.* The streams in the vicinity of Bella Coola have received a plentiful supply of sockeye, springs and pinks particularly and the spawning grounds of the Kimsquit area were found to be in a satisfactory condition with the exception of pinks, the sockeye and chum varieties being well up to the average. The conditions were considerably less satisfactory, however, along Burke and Dean Channels. These sections must receive closer attention in the future and it will probably be found necessary to close several of the streams entirely for a time.

*Rivers Inlet.* The pack of sockeye on the Inlet during the season has been a fair average and there was found to be an ample supply of spawning salmon of this variety in most of the streams emptying into Owekano lake. The Overseer, in his report, observes as follows:—

“I consider the Department justified in taking an optimistic view for the future of the industry on Rivers Inlet. The improved methods at



the hatchery, increased weekly closed times during the fishing season, early closing to allow the remaining salmon to enter the lake unmolested, is in my opinion solving the problem of conservation."

The Provincial Inspecting Officer in his report observes in part as follows:—

"I am of the opinion that the favourable conditions which were noted on all the tributaries, especially those at the head of the lake, showed clearly that a run of sockeye of greater proportion returned to the Inlet than was the case in 1921 and 1922. Not only did the packers put up a larger pack but the spawning beds showed a corresponding increase. Since the spawning beds in the brood years contained a run of only moderate proportions it must be assumed that in assisting the natural spawning by replenishing the rivers and creeks with millions of eggs from the hatchery added to which millions of young fry are turned loose into them each year, the Dominion Fisheries authorities have at last found a solution to the difficulty of ensuring an increase in the run of sockeye each year."

It will be remembered that owing to the large number of fishing boats licensed during the season it was necessary to increase the weekly closed period by nine hours. Undoubtedly the conditions at Rivers Inlet are satisfactory.

*Smiths Inlet.* Again this season there was an excellent showing of parent sockeye salmon on the spawning grounds although the pack was quite a large one. Here, as in Rivers Inlet, the fishing has become more intensive during recent years, which necessitates a shorter fishing season. In view, however, of the powers vested in the British Columbia administration there should be no difficulty in taking care of the situation.

*Alert Bay District.* The principal sockeye stream in this area is the Nimpkish river. The enforcement of the 72-hour weekly closed season has again permitted the necessary escapement of parent fish to the spawning areas. The beds were well seeded. In this connection it is interesting to note that the B.C. Fishing and Packing Company has reopened its hatchery on Nimpkish lake. The supply of springs was satisfactory although in view of it being an off year for coho there was not a large supply of this variety. An ample supply of chums ascended the river. The conditions at this point are particularly gratifying in view of the fact that 26 drag-seines operated in the river and 45 purse-seines fished along the shores on both sides of the river. Taking the district as a whole it is well stocked with salmon during the season. The run of pinks was very good.

*Quathiaski District.* The supply of sockeye was not as good as expected but there was an ample supply of pinks and chums and cohoes to take care of the spawning requirements.

*Comox District.* The varieties found in this area are pinks, chums, cohoes, and steelhead. Owing to the unusually heavy rains which came just at the right moment a plentiful supply of all these varieties succeeded in reaching the spawning grounds.

*Pender Harbour District.* This is also almost entirely frequented by fall salmon although a small run of sockeye ascends each year the Sauchen-Auch river. The catch at this point was very small, approximately only 3,000 fish, and it is estimated that between 18,000 and 19,000 passed through the fishway to the spawning grounds. Owing to 1926 being the off year for pinks the run was much lighter than the previous season although comparing favourably with the brood year. Owing to the timely arrival of the rains most of the pinks were able to reach the spawning grounds. The same thing applied very largely to the chums.

*Nanaimo District.* Here again the heavy rains resulted in the streams being in flood at the time of the arrival of the pinks, chums and cohoes, and the streams were well provided with spawning fish.

*Cowichan District.* The Cowichan river is the principal stream in this area. In October there was a splendid run of spring salmon. Previous to that time there had been excellent fishing in the vicinity of the mouth of the river, springs weighing from 40 to 60 pounds being taken by anglers and provided excellent sport. The spring run of steelhead trout was splendid and the spawning grounds should be well taken care of. The run of chums was not up to expectations but a very large percentage was able to reach the spawning grounds. The sport fishing in the district was very good.

*Alberni District.* The outstanding feature in this area was undoubtedly the large run of sockeye salmon to the Sproat and Stamp rivers. It is reported on good authority that years ago there was a fair run of this variety to these two streams but some seasons owing to the water conditions at Stamp Falls it has been impossible for the salmon to pass over on their way to Great Central lake. In addition there was for many years a dam across the river at the site of the old paper mill which prevented the ascent of the fish to the Sproat Lake spawning grounds. In 1915 a portion of the dam was removed which permitted the fish to ascend. During the seasons 1921-2-3-4-5 the boundary at the head of Alberni canal was placed sufficiently far out to prevent the fishing for these runs in order that they might be built up to their original condition of productivity. Also since 1921 an effort has been made by means of planting eyed sockeye eggs in the Sproat and Great Central areas to further assist in restoring the large quantities of sockeye. Whether it is due to one or other of these causes or that all contributed, the fact remains that during the season 1926 there was an unusually large run of sockeye to both the Sproat and the Stamp rivers, the run commencing about the 1st of May and lasting right through until approximately August 15. The water conditions at Stamp Falls prevented the fish from passing up but by means of dip nets and a crew of men 11,000 were passed safely over the obstruction. Unfortunately thousands died below the falls unspawned. It is the intention during 1927 to install a suitable fishway at this point which will permit all varieties of fish to easily ascend.

An unusual phase during the season was the appearance of a considerable number of pink salmon which ascended Sarita, Nahmint, Anderson and Toquart Rivers. As far as our records go there is no report of their ever having been any number of this variety in the Barclay Sound district.

The catch of chum salmon was very considerably less than that of the preceding season. The reason was not that there were not as many fish but was due to the fact that the rains came at the right moment and permitted a much smaller percentage of the run being taken by the fishermen. The streams were all well seeded with this variety.

The run of chums to the Nitinat district was approximately the same as 1925 and a good supply succeeded in reaching the spawning areas.

*Clayoquot Sound.*—The only sockeye streams in this area are the Kennedy River and the Medgin River. A very satisfactory catch of sockeye was taken principally in the vicinity of the Kennedy River. A good supply reached the spawning grounds in Kennedy Lake and the upper reaches of the Medgin River. The quantities of chums, pinks and cohoes were also found to be satisfactory in this area.

*Nootka District.*—Chums, springs, cohoes and pink salmon compose the run to this area. The quantity of cohoes and pinks was small. The fall run of spring salmon practically all is able to reach the spawning grounds. The



rains made it possible for a considerable portion of the chums to also pass up the streams and seeding generally of the area with this variety was satisfactory. This applies particularly to Camp Bay Stream, Deserted Creek, Conuma River, Marvins Bay Stream, Owas-Sit-sa River, and Garden Creek.

*Kyûquot District.*—The supply of chums and cohoes on the spawning grounds was found to be fair but the springs were few in number. On the whole the district is only fairly well seeded.

*Quatsino District.*—There is a small supply of creek sockeye in the district but the main quantity of salmon is of the fall variety, the largest proportion being chums. The area was some years ago quite intensively fished for the pink salmon but during recent seasons the operations have been small and it is hoped that the runs will shortly show the effects of the less intensive fishing, although there was a considerably increased quantity of gear in these waters during the season of 1926.

#### FRASER RIVER WATERSHED

The conditions found in the section above Hells Gate show improvement over past seasons in certain sections since the failure of the big four year run.

In the Stuart Lake District the sockeye salmon run was not as large as the previous year but with the exception of 1925 was the largest observed for a good many seasons. In Kynoch Creek, emptying into the Middle River, 250 spawning sockeye were counted where for years previous practically none had been seen. Fortunately the sockeye arrived some days before the Indians expected them and as a result they practically all succeeded in reaching their spawning grounds. While the observance of 250 spawning fish in one stream does not sound particularly encouraging at the same time compared to many seasons past it is most gratifying and would appear to show that some returns are being obtained from the fish cultural operations which have been conducted so intensively and by newer methods during the past five years in the district.

The run of spring salmon to the Stuart Lake district was unusually good.

Whitefish, in the Prince George district generally in the larger lakes, appear to be plentiful, some having been taken weighing as much as 10 pounds.

Particular attention was paid this year to the Francois Lake area. The evidence obtained would appear to show that years ago there was an excellent run of sockeye but practically none has been found for a number of seasons past according to the old Indians and Hudsons Bay employees who have been many years in the district. This year, however, quite a run of sockeye, comparatively speaking, passed up into the district and Indians are reported as having taken a number at the mouth of Uncha Creek in trout nets. These were in excellent condition.

In the Bowron River the fishery officer observed at least 600 sockeye on the spawning beds. While this is very small number considering the size of the area, at the same time in view of conditions found during the past few years it is highly encouraging. For the past three years practically no spawning sockeye have been found.

The run of sockeye to the Horsefly River, a tributary of Quesnel Lake, is reported as being the best for several years. At least 600 sockeye were seen in the river, which is encouraging in view of the fact that for the past four years, apart from an odd fish, there has been practically none of this variety noticed.

The reports received from the Chilcotin district are of no particular value in view of the lack of information with which the knowledge gained during 1926 can be compared. While the Indians took as many as 500 sockeye it is felt that the run was not as good as the preceding year for instance. The local fishery officer estimates the number as comparing favourably with the quantity arriving four years previously.



It is the conditions which were found on the Shuswap area which have given reason for encouragement. In 1922, 2,320,000 sockeye eggs were deposited by the Harrison Box method in Eagle River, a tributary to Shuswap Lake. This year although the river was fenced only two sockeye were taken. At Adams River, however, and Little River, two miles distant, an unusually large run of sockeye arrived in the early part of October. Four years previously it was estimated that between 20,000 and 25,000 sockeye parents spawned in Adams River. This season it is conservatively estimated that there were at least half a million spawning fish in Adams River between the canyon and the mouth, a distance of approximately seven miles, and in addition there were undoubtedly several hundred thousand spawned in Little River between Big and Little Shuswap Lakes. It is impossible to say whether this large return was the result of the planting of eyed eggs in the Eagle River four years previously or were the progeny of the 20 odd thousand spawning fish found in the brood year. When this unusually large quantity of sockeye was observed at the mouth of the Fraser they were found to be of inferior quality compared to the early run as the skin was discoloured, although apart from this feature the canned product was fair. The run was followed closely and it was found that all of it turned up the North Thompson River and proceeded to the Shuswap area. Unfortunately it was not possible to determine from what direction these fish approached the Fraser River. None was taken in the traps on Juan de Fuca Straits although several thousand were reported from the traps in the vicinity of Point Roberts. None was reported as having been taken at Deepwater Bay near Seymour Narrows but two weeks previous to these fish entering the Fraser River proper they were observed in English Bay just outside of Vancouver Harbour and the fishermen were obtaining good catches. Unfortunately there was no money available this year for carrying on the tagging operations. Had these been continued at Deepwater Bay and the traps in Juan de Fuca Straits it is felt that some interesting information might have been obtained.

It is interesting to note that although this late large run of salmon were observed by the fishery officers miles below Hells Gate on the way up the Fraser River, very few were seen at Hells Gate itself although all got through, which demonstrates that conditions at the Gate were quite satisfactory at the time these fish arrived. The local fishery guardian, Mr. T. E. Scott, in this connection observes as follows:—

“It is stated that more sockeye passed on to the spawning grounds than for many years. It is also to be recorded that less salmon were in view than any previous season at Hells Gate.”

Again this year in the Seton-Anderson Lake district quite a considerable number of spawning sockeye were observed, the number being, however, smaller than in 1925.

It is estimated that the number of salmon taken by the Indians of the Westminster, Lytton, Kamloops and Williams Lake Agencies was as follows:—

Sockeye.. . . . .	5,600
Springs.. . . . .	6,700
Cohoës.. . . . .	4,500
Chums.. . . . .	1,500

Mr. Scott observes with regard to his district that from the numbers seen during the season he is led to believe that the sturgeon are increasing rapidly.

The run of sockeye to the Birkenhead river has been well maintained. The Superintendent of the Pemberton Hatchery states that the run of 1926 was considerably larger than that of 1925 although it is difficult to compare it with four years previous owing to the fact that in 1922 the water was high through-

out all the season which brought the fish in with a rush and made the estimating of the quantity considerably more difficult. He feels, however, that the quantity very nearly, if not quite, equals that of 1922.

The Harrison Lake examination showed that Morris creek, the principal sockeye spawning grounds, contained more of this variety than had been observed for a number of years past. These were all permitted to spawn naturally as the hatchery was not in operation. The Indians report as having seen more of this variety of salmon passing up the Harrison River rapids than for a considerable number of seasons past. This also applies to the quantity of spring salmon.

There was an average supply of spawning sockeye to Cultus lake although owing to the operations of the Biological Board none was permitted to pass up into the lake and spawn naturally. All the eggs were taken and placed in the hatchery.

An examination of the Pitt Lake district also showed an excellent seeding of sockeye. Undoubtedly the supply at that point is at least being maintained. The Superintendent of the hatchery observes as follows:—

“I may say that the run of sockeye this year in comparison with former years was much bigger.”

At Indian river, at the head of Burrard inlet, and the streams at the head of Howe sound, the salmon runs which are all of the fall variety, were a fair average.

The season 1926 was that in which there were practically no pinks running to the Fraser river system. They run in alternate years only and then in considerable numbers.

Generally speaking conditions in the Fraser river were found to be fairly satisfactory.

## APPENDIX 2

## REPORT ON THE WORK OF THE BIOLOGICAL BOARD FOR 1926

By J. J. COWIE, *Secretary-Treasurer*

The board has charge of and controls the work at the scientific stations. It meets once a year or oftener at such times and places as are found necessary. A committee known as the Executive Committee supervises and carries out the undertakings involved in the policies formulated by the board. Sub-committees on the Atlantic and Pacific coasts have immediate supervision, under the central executive, of the activities of the boards.

## STAFF OF WORKERS AT THE RESPECTIVE STATIONS

## BIOLOGICAL STATION, AT ST. ANDREWS, N.B.

The station was opened for workers in residence on June 1, and closed September 15.

*Investigators*

The following is a list of the investigators who were at the station during the season, the subjects upon which they were engaged, and the duration of their stays:—

Miss Margaret G. Allan, Dalhousie University; June 3 to August 31; illustration of marine algae.

Prof. B. P. Babkin, Dalhousie University; June 18 to August 20; physiology of the digestive tract in fishes.

Miss Helen I. Battle, University of Western Ontario; June 17 to September 3; upper lethal temperatures and temperature coefficient of death rate in elasmobranch tissues.

Mr. S. A. Beatty, Queen's University; June 9 to August 24; chemistry of fish muscle.

Dr. H. P. Bell, Dalhousie University; June 3 to September 3; succession of algal forms in tide pools.

Mr. A. F. Chaisson, University of St. Francis Xavier's College; June 5 to August 25; lethal effects of extreme salinities on tissues of fish.

Dr. C. J. Connolly, University of St. Francis Xavier's College; August 16 to August 21; copepoda parasitic on crustacea.

Miss C. Helen Craw, University of Toronto; July 15 to September 13; anatomy of the nervous system of the skate.

Miss Viola M. Davidson, High School of Commerce, Toronto; June 21 to August 18; causation of diatom maxima.

Mr. D. Cecil B. Duff, University of Toronto; June 4 to August 23; resistance of fish to certain pathogenic organisms.

Dr. A. H. Gee, University of Toronto; July 5 to September 6; spoiling organisms in haddock muscle.

Mr. F. R. Hayes, Dalhousie University; June 10 to July 13; salinity and temperature tolerance for fry of Atlantic salmon.

Mr. J. M. Harvey, University of Toronto; June 3 to August 16; the effect of high intensity of light on marine copepods.

Miss Jean T. Henderson, McGill University; July 13 to September 3; effect of temperature on the heart beat in schizopods.



Dr. A. G. Huntsman, June 18 to July 15, July 23 to July 31, August 15 to August 31, September 8 to September 20; post mortem changes in the flesh of fishes.

Mr. G. W. Jeffers, University of Toronto; May 13 to 25; September 8 to September 15; experiments with smelt eggs; hydrogen ion concentration in haddock flesh.

Dr. A. B. Klugh, Queen's University; June 4 to September 10; the measurement of light; survey of Chamcook lake.

Mr. L. W. Koch, Queen's University; June 4 to July 1; culture of Rotifera.

Dr. A. H. Leim, April 24 to May 20, May 31 to July 5, July 13 to July 31, August 16 to October 1; suitability of Quill lake water for development of carp eggs; effect of handling on rigor mortis of haddock.

Dr. J. J. R. Macleod, University of Toronto; June 22 to September 20; carbohydrate metabolism in fishes.

Miss Emma C. Odell, Macdonald College; June 21 to September 15; phototropism of various marine copepods.

Mrs. K. F. Pinhey, McGill University; June 26th to August 7; effect of temperature on the respiration of flounders.

Dr. G. B. Reed, Queen's University; July 15 to July 31; autolytic and bacteriological decomposition of fish.

Miss C. E. Rice, Queen's University; June 5 to August 21; autolytic and bacteriological decomposition in lobster.

Mr. S. J. Sanderson, Queen's University; June 8 to August 20; autolytic and bacteriological decomposition in haddock.

Mr. T. R. Sarjeant, University of Toronto; June 30 to September 6; rates of growth of internal organs of haddock in relation to growth of the body as a whole.

Mr. W. W. Simpson, University of Toronto; June 22 to August 28; carbohydrate metabolism of fishes.

Mr. E. E. Watson, McGill University; June 5 to August 20; salinity titrations; effect of damming Passamaquoddy bay.

Miss Nelda Wright, University of Western Ontario; June 26 to August 27; diatoms in the fish food cycle.

### *General Investigations*

Weekly and monthly collections of plankton and hydrographic material at a number of established stations in Passamaquoddy bay, St. Croix river, the Bay of Fundy, etc., were continued. Daily records of the temperature of air and water, which have been taken for several years at St. Andrews, were continued.

### *Field Investigations*

The *Edward E. Prince* spent the summer along the southwestern coast of Nova Scotia. In addition to obtaining hydrographic, planktonic and other material, an extensive fish tagging program was carried out. 8,333 fish were measured, scales taken and tagged. Of these 1,700 were mackerel, 3,714 cod, 2,749 haddock, 162 pollock, and 8 cusk. To date, December 31, the following numbers of tags have been returned: 6 mackerel, 239 cod, 16 haddock, and 1 pollock.

The study of the currents along this part of the coast by means of drift bottles was also continued. During the summer four lines were run from Cape Forchu bell buoy southwest a distance of 30 miles, at four-week intervals, and five lines from Brazil Rock over a course S.  $\frac{1}{2}$  E. a distance of 50 miles, at three-week intervals; 1,469 bottles in all were put out. The returns from these

bottles, which to December 31 number 279, will tend to show what differences there may be in the course of the currents on these parts of the coast at different times during the summer.

Mr. H. C. White continued his experiments on trout planting on Forbes brook, P.E.I., the particular experiment for this season being an attempt to analyze the factors concerned in the losses of brook trout fry subsequent to planting.

Mr. F. R. Hayes carried out an investigation to define the optimum conditions for the fry of the Atlantic salmon. This was done on Crowe's brook, a branch of the Northwest Miramichi river at Sevgole, N.B.

During the early part of the season Dr. A. H. Leim carried on experiments in the Magaguadavic river, near St. George, N.B., the object being to increase the number of smelt fry in that river, and to continue an investigation of the limiting factors for the smelt in the Passamaquoddy region.

Mr. D. A. McKay, of Ottawa, Ont., carried on an experiment in St. Mary bay, N.S., to determine the success of planting berried lobsters in the shallow waters of that bay. Mr. McKay also carried on a search in St. Mary bay for young lobsters of one, two and three years of age.

Mr. D. C. B. Duff visited the Middleton, N.S., hatchery and made an investigation of diseased fry there to determine the cause of the disease, which was suspected to be Octomitiiasis. He also investigated the conditions in the waters near Yarmouth, N.S., in connection with the report of heavy infection of trout and salmon with tape worms. Also Mr. Duff, the director, and the assistant director examined into difficulties experienced with the salmon retaining pond at St. John, N.B., and the hatchery pond at Middleton, N.S.

At the request of the Department of Marine and Fisheries, Fish Culture Branch, Dr. A. H. Leim made an investigation of White Marsh stream, near Florenceville, N.B., to determine the suitability of the locality for the establishment of a hatchery.

Dr. Leim also continued his investigations of conditions in the lakes of New Brunswick; Chamcook, Wheatons, and Grand Lake, being studied.

Mr. G. W. Jeffers carried on an investigation of the capelin on the Gaspé coast at Barachois and Newport Centre.

Mr. A. W. H. Needler, of the University of Toronto, began an investigation of the haddock, using Lockeport, N.S., as a base for operations.

Mr. G. Lyman Duff, of the University of Toronto, continued his investigation of the cod, using the Fisheries Experimental Station at Halifax as a base for his work.

#### *Educational Work*

From the 23rd to the 28th of August Dr. Leim conducted a course of instruction in collecting methods given at the station to seven of the hatchery officers and the district inspector of hatcheries of the Maritime Provinces.

#### *Library*

During the season there were about 575 additions to the library. Some of the most important of these were: 44 volumes of the Zoological Record, making that set almost complete to date; practically a complete set of the Bulletins of the New York State Museum; Reports of the British Museum (Natural History) "Terra Nova" Expedition, 1910, Zoology, Vols. 1-8, and Botany, Vols. 1 and 2; and a complete set to date of International Revue der Gesamten Hydrobiologie u. Hydrographie.

#### *Visitors*

Among the visitors at the station during the summer were the following: Mr. J. J. Cowie, Secretary-Treasurer of the Board; Messrs. Elmer Higgins and

O. E. Sette, of the United States Bureau of Fisheries; Mr. H. E. Tanner, of the Fisheries Experimental Station (Atlantic); Mr. James Catt, Inspector of Hatcheries for the Maritime Provinces; and Prof. A. C. Redfield, of Harvard University.

#### EXPERIMENTAL STATION AT HALIFAX, N.S.

##### *Investigations on Smoking of Fish*

Mr. Hess continued his study of the disinfectant action of smoke in the smoking of fish. Dr. Forbes attempted to determine the nature of the material in the smoke responsible for the colouring of fish, as well as the factors affecting the production of the colour. He also studied (1) the factors involved in the production of the sheen on the surface of smoked fish, and (2) the action of brining in increasing the water and salt content of the fish. Mr. Weld investigated histologically the formation of the pellicle on the surface of the fish, which protects the smoked fish from rapid drying.

##### *Investigation of Fish Freezing*

Mr. MacKay made a study of the action of brine movement on the rate of freezing of fish, and with Mr. Weld went into the question of the effect of the rate of freezing and storage on the quality of the fish as regards separation of water from the other constituents.

Mr. D. B. Finn investigated the transfer of heat from sodium chloride brine to calcium chloride brine in using the former for the freezing of fish and the latter circulating through pipe coils for cooling the former. He also determined the specific heat of haddock muscle.

##### *Investigations on Fresh Fish*

The changes in fish while being kept fresh are of importance for all branches of the industry. Mr. Dauphinee followed these changes as regards hydrogen-ion concentration, ammonia, indol, and hydrogen sulphide, in order to evolve a simple method for rapidly determining the extent of the change, which method might be used in testing commercially the freshness of fish. Dr. Dreyer in the same connection analyzed fish muscle as to its content of ammonia and trimethylamine, which are produced by decomposition. Dr. Huntsman took up the same matter while at the Station at St. Andrews, N.B., as the facilities there for getting fish fresh from the water are very much better than at Halifax. He studied the changes in hydrogen-ion concentration and in decolorizing power over methylene blue, correlating them with the changes in stiffening of the muscle.

##### *Investigations in Canning*

Mr. Ross investigated the canning of lobster paste or tomalley during the fall season in Northumberland strait, and subsequently carried through a long series of experiments in the production of the proper colour, and consistency of the paste. He developed a method for the canning of a proposed standard paste without the use of roe or any other material other than from the lobster to get the required colour, and without the use of any extraneous substance to get the proper consistency. On examination by members of the 'Sub-Committee on Canning, paste packed by this method was declared to be equal to the best of about two dozen different commercial packs.



Trouble experienced by the shippers of canned lobster in having shipments condemned in England because of a percentage of "springers" among the cans was looked into. An examination of the springers by Mr. Hess showed that these were in as good condition as the usual run of cans and entirely suitable for food. Experiments by Mr. Ross showed that this condition was probably due to the cans not being hot when sealed, too much air remaining in the cans.

### *Investigations in Salting of Fish*

Apart from the consideration of brining in connection with the smoking of fish, Dr. Forbes carried through certain tests concerning the differences in the grades of salt used in the salting of fish. He determined the relative rates of penetration of Malagash and Trapani salts into the flesh of the fish and experimented with the addition of salts of lime and magnesia to Malagash salt so that a very white fish could be produced for the boneless trade.

### *New Products*

Some attention was given to the possibilities of developing new lines for the fishing industry. Mr. Ross canned squid and crabs, and samples of the former were sent to Japan for report as to quality. Mr. H. A. Wilson dried both squid and eels and went into the possibilities of working up markets for these in Italy and in Japan. These attempts have not yet reached fruition.

### *Development of Fishery Apparatus*

A self-feeding smoke producer for the smoking of fish has been developed at the station, largely by Dr. Forbes, and this has been used for the smoking experiments.

A small brine freezer capable of handling from one to two hundred pounds of fish per hour has been worked out largely by the director. It is for use with ice and salt for the cooling of the brine. It involves a new type of circulation past the fish, a new type of circulation through the ice-salt mixture, and a new design of centrifugal pump included in the tank, which is about three feet square.

A new method of holding the fish during brine freezing has been devised by the director. It involves freezing the fish to galvanized plates during slow immersion, the fish being held flat and below the brine in this way.

### *General Investigations*

Weekly and fortnightly collections of plankton, and hydrographic material were continued at two of the stations established by the *Edward E. Prince* in 1925, one in Halifax harbour, and the other in Bedford basin.

Manuscript reports presented:—

Dauphinee, J. A.—Experiments on the production and the chemistry of wood smoke in connection with the fish smoking industry.

Dreyer, N.B.—Protein changes in pickled and smoked fish.

Dreyer, N.B.—Some observations on smoking fish.

Finn, D. B.—Freezing experiments.

Finn, D. B.—Determination of specific heat of fresh haddock muscle.

Forbes, J. C.—Investigation into the tensile strength of fish muscle before and after treatment.

Forbes, J. C. and Dauphinee, J. A.—Effect of smoke on the tensile strength of fish muscle.

Gee, A. H.—The micro-organisms responsible for the spoiling of fish muscle.

Hess, E.—Influence of smoke and its constituents on the bacteria in the smoke curing of fish.

Wynne, A. M.—The hydrolysis of haddock muscle by trypsin.

### *Education*

A two weeks' course of instruction was given to a class of twenty-one fishery officials in April, 1926, on the curing of fish by drying and smoking and on the life histories of fishes, together with the scientific basis for the same. The instruction on the fundamental side was given at Dalhousie University by Professors McIntosh, Bronson and Bean and that on the applied side at the Experimental Station by the director assisted by Dr. Forbes and Mr. Hess.

In August, 1926, a two weeks' course for hatchery officers was conducted. Courses in anatomy and physiology of fishes, fish diseases, and fish food were given in conjunction with physics and chemistry. The instruction was given by Professor McIntosh, Dr. Huntsman and Dr. Leim.

An educator was appointed to take charge of the development and organization of the educational work and material was prepared for addresses and for general instruction, including a series of lantern slides bearing on various phases of the fishing industry.

During the year the director gave addresses at Canso, Liverpool, Yarmouth and Halifax. Dr. Forbes and Mr. Tanner lectured at Truro to the Summer School for Teachers. In the fall Mr. Tanner spoke before a teachers' convention in New Glasgow.

### *Co-operation*

Further advisory committees were formed from local representatives of the fishing industry to cover the fields of smoking and canning. These have proved of very great value for the work of the station. Eight meetings of advisory committees in all were held during the year.

As previously, considerable assistance was received from both Dalhousie University and the Nova Scotia Technical College, the closeness of both institutions to the station forming a considerable asset.

### *Improvements*

The north half of the upper floor of the station building was finished similarly to the remainder to form a library, a board room, a general office, a director's office, and a special laboratory. The north side of the roof of the boathouse had to be covered with ruberoid. A fence was erected between the part of the King's wharf property occupied by the Station and the remainder on the north. A motor boat of about thirty feet in length was constructed at Tiverton and put into commission during the summer. It was built from the same plans and specifications as the *Delphine* at the Atlantic Biological Station. It has been named the *Clione* after a marine winged mollusk that forms the chief food of the whale in northern seas.

### BIOLOGICAL STATION, NANAIMO, B.C., AND FIELD INVESTIGATIONS

The Nanaimo Station now consists of a group of five buildings located on three acres of land leased for a period of ninety-nine years from the Canadian Collieries (Dunsmuir) Limited. The original building erected in 1908 is now

the Biological residence building. The southeastern portion is of two stories and constitutes the residence of the workers. On the lower floor there is a common room and an office, and on the upper floor, four bedrooms. The north-western portion houses the biological laboratory, with working space for eight persons, a small library, a small photographic dark room, and in the basement, an office, a museum, a storeroom and a lavatory.

The laboratory is equipped with fresh and salt water and gas along one side. An attempt is made to heat the entire building by means of two stoves and a fire-place.

The dining-room-kitchen building is an old roughly constructed structure consisting of two small dining-rooms, a kitchen and pantry on the lower floor and one bedroom upstairs for the female help.

During the winter of 1923-24, a chemical laboratory 36 by 24 was built. This consists of one story and provides working accommodation for about five investigators. It is supplied with fresh and salt water and gas and is heated by a furnace.

A director's bungalow was erected in 1925 and a caretaker's cottage also in 1925.

The buildings are all lighted by electricity generated by a Delco plant. Negotiations are now under way with the Nanaimo Light and Power Company for the extension of the city line to the station. As stated previously, the residence contains but four bed-rooms for workers. Additional accommodation is provided by means of tents and during the past two summers six have been in use. Accommodation for summer help has also to be provided by means of tents.

In 1924 an additional three acres of land lying northwest of the original holding was leased for 99 years from the Canadian Collieries (Dunsmuir) Limited. Tents have been put on the land and it is hoped that in the near future a residence building and cottages for investigators with families may be erected here.

The fresh water supply for the station comes from springs on the hill side to the northwest. During this year a new concrete reservoir has been constructed. In order that this supply should be protected and reserved for the station the Canadian Collieries (Dunsmuir) Limited have granted to the board a ninety-nine year lease of five acres surrounding the source.

In April, 1926, the new sixty-foot motor boat was completed. It contains a 45-50 Petters oil engine and makes about 10 knots per hour. There is sleeping accommodation aboard for eight persons. A gasoline power winch has been placed on the after deck for the operation of dredges and oceanographical apparatus. Aft of the pilot house there is a small laboratory. The boat has been named the *A. P. Knight* in honour of Dr. A. P. Knight.

With the acquisition of the motor boat it has been necessary to employ an engineer throughout the year. We were fortunate in securing the services of Mr. R. G. Good, a young man who has had two years university training and who by reason of this has been able to give considerable assistance with hydrographic work and with technical work in the laboratories. Mr. Groth has been made captain and during the winter months has also acted as caretaker.

Miss E. Keighley was appointed secretary during the past year and the Director thereby relieved of much office and library routine.

The special needs of this station are:—

1. *A Residence Building.*—The present accommodation of four bedrooms is inadequate and further the lodging quarters should be entirely separate from the working quarters. Further the present dining room-kitchen building is too small and inconvenient, and there is insufficient space for accommodation of help. The quarters are very uncomfortable during the winter months.



2. *A Heating Plant.*—An attempt has been made to heat the whole biological and residence building by means of two stoves and a fire-place. Obviously this is impossible, but there is a limit to the number of stoves which may be set up. In conjunction with the installation of a heating system, the biological laboratory, at least, should be lined because when the building was constructed winter occupation was not contemplated and building paper was not placed between the walls so that winds blow through and the rooms are far from being comfortable.

3. *Scientific Apparatus and Publications.*—It is not necessary to specify details here.

With the appointment of the present director, this station has been open throughout the year and a number of researches have been carried out during the fall, winter and spring months in addition to those carried out during the summer.

#### *Researches*

*Systematic.*—This phase of the station's work has been carried forward by a number of workers and in a few years time it will be possible to issue a fairly complete faunal and floral list for the Pacific coast.

Dr. and Mrs. O'Donoghue have studied the Bryozoa, Nudibranchs, Edhino-derms and have commenced with the Decapod Crustacea.

Mrs. C. Berkeley is completing her account of the Annelid worms.

Mr. G. H. Wailes is continuing his exhaustive, illustrated lists of the Protozoa.

Prof. J. R. Dymond has commenced a study of the marine fish.

Rev. Robert Connell is completing a list of the seaweeds.

Other systematic studies completed during recent years have been:—

Hydroids by Dr. C. McLean Fraser, Medusae by Dr. R. E. Foerster.

Isopods by Mr. A. R. Fee, Barnacles by Mr. I. E. Cornwall.

#### *Physical and Biochemical*

Dr. F. D. White studied experimentally the limiting factors during the early life history of the gribble and teredo. He had previously carried out researches along somewhat similar lines in Scotland.

Mr. J. P. Quigley studied the physiological changes occurring when the dogfish, *Squalus sucklii* was transferred to fresh water and modified salt water. This research has a bearing upon the problem of salmon migrations.

#### *Oceanographical*

During the past summer Dr. A. H. Hutchinson, Mr. C. Lucas and Dr. W. A. Clemens commenced a study of the movements of the Fraser river water in the strait of Georgia. Dr. Hutchinson has studied the distribution of the phytoplankton, quantitatively and qualitatively, in this connection. Mr. Lucas has analyzed a very large number of water samples and Dr. Clemens has studied the currents by means of drift bottles.

Temperatures and other data are now being secured from Departure Bay, one station in the strait of Georgia, in the Fraser river near New Westminster, at William Head (south end of Vancouver island), two stations near Prince Rupert, in Ladysmith harbour in connection with the oyster investigation, and along the west coast of Vancouver in connection with the salmon tagging work.

#### *Miscellaneous*

Professor J. R. Dymond has commenced a systematical study of the trout of British Columbia. There has been much uncertainty as to the status of some of the varieties and species of trout and it seemed desirable in connection with

fish cultural work to have these forms definitely delimited. Lack of funds prevented Professor Dymond from going into the field, but arrangements were made with the Fisheries Branch, the Provincial Fisheries Department, the angling associations of the province, and with various individuals whereby specimens were sent to the station. A very large amount of material and information has been received.

Mr. C. Berkeley has commenced a study of marine bacteria. The actions, conditions and existence, etc., of luminescent forms are at present occupying his attention.

Dr. and Mrs. Clemens have continued their studies of the sockeye salmon data collected by the Provincial Department of Fisheries in the Fraser river, Rivers inlet, Skeena river, and Naas river.

### *Field Investigations*

Dr. C. McLean Fraser, assisted by Miss G. Smith, carried out a very comprehensive investigation of the four species of commercial clams in the vicinity of Sidney. This included the spawning periods, rates of growth, distribution, general surveys of clam beds, physicochemical conditions, etc.

Prof. G. J. Spencer investigated the life-history and ecology of the commercial crabs in Clayoquot sound, west coast of Vancouver island. His results show that the mating season in 1926 occurred from April 15 to June 15 and that the close period should cover this period approximately rather than June 15 to August 15 as obtains by present regulations.

Mr. C. R. Elsey has been following closely the conditions of oyster culture in Ladysmith harbour and is obtaining a supply of spat from Japan for experimental study this summer.

Dr. H. C. Williamson has continued his studies of spring salmon migration on the west coast of Vancouver island. Tagging operations over a period of about three weeks in 1925 off Ucluelet showed that the great majority of these fish went to the Columbia river to spawn and some even going as far south as the Sacramento river, California. It seemed desirable to determine if the same distribution occurred throughout the whole season and accordingly Dr. Williamson, assisted by Mr. C. Mottley, carried out tagging operations from early March to late September, 1926. The returns are now being worked up. Mr. Mottley has made a study of the scales of all the fish tagged and in many cases has received scales from the fish when recaptured by the fishermen. Much valuable information has been obtained regarding the life-history of the salmon and data concerning the fishery.

Dr. Williamson has also been carrying out investigation of the Pacific herring, involving studies of races, rates of growth, food, spawning, extent and distribution of spawning areas, etc.

### *Fish Cultural Investigations.*

Fish cultural investigations at Cultus Lake in charge of Dr. R. E. Foerster.

In 1924 with the appointment of Dr. R. E. Foerster a field research station was established at Cultus Lake, eighty miles east of Vancouver, for the purpose of making an intensive year-round study of the fresh water phases of the life-history of sockeye salmon. Later with the formation of the Research Committee of the board, the study was extended to include that of artificial propagation. In the latter connection the following program was approved.

1. In the fall of 1925 the entire run of sockeye to Cultus lake was intercepted, the individuals counted, proportions of the sexes determined, and then allowed to pass into the lake to spawn naturally.



2. In the fall of 1926, the entire run was again intercepted all the fish stripped and the fertilized eggs placed in the hatchery. This spring the fry will be liberated in the lake.

3. In the fall of 1927, the same procedure will be followed as in 1926 but in the following spring, the eyed-eggs will be planted in the gravel beds of the tributary streams according to the method being followed by the Superintendent of Hatcheries for British Columbia.

In each spring the young sockeye migrating seaward will be counted and thus definite data will be obtained as to the efficiency of each method of propagation. It is planned to carry out this procedure over a period of twelve years. A substantial screen fence has been constructed across the outlet of Cultus lake so as to intercept the migrating yearlings. In the spring of 1926 a test was made on the migration and over one and a quarter million yearling sockeye were counted without difficulty. Of these about 100,000 were marked by clipping off the adipose and right ventral fins.

*Fish Cultural Investigations.*—Dr. Foerster and his assistants are now engaged in counting the migrating yearlings resulting from the natural spawning of 5,400 sockeye in 1926. The run of that year consisted of 3,700 females and allowing 3,500 as an average egg production per female there were then over 10,000,000 eggs deposited on the spawning beds.

Dr. Foerster is making a very careful study of all phases of both natural and artificial propagation. In addition he is following the physico-chemical conditions in the lake and obtaining quantitative data on the food supply.

*Eagle River Counting.*—Eggs from the sockeye runs to Cultus lake in the falls of 1921, 1922, 1923 and 1924 were planted in Eagle river, a tributary of Shuswap lake in the Upper Fraser drainage area. In view of Dr. Foerster's familiarity with the Cultus lake race it seemed desirable that counts should be made of the fish going to the Eagle river spawning beds in 1925 and onward and an attempt was made to identify any individuals of the Cultus lake race if they appeared in Eagle river. In 1925 it was impossible to carry out the work because of lack of funds. In 1926 the necessary funds were provided and Dr. Foerster carried out arrangements for making the count. However, only four sockeye appeared. The reasons for the complete failure of the sockeye run to Eagle river in this year are not apparent at the present time. Provision is being made for continuing the work in 1927.

#### EXPERIMENTAL STATION AT PRINCE RUPERT

In March, 1926, temporary quarters were established in the basement of the Mill Boarding House at Seal Cove, which is situated on the outskirts of Prince Rupert. Arrangements here were of a very temporary nature and extensive laboratory work could not be undertaken. For this reason the work was limited to that which could be undertaken within the fish plants themselves and to the planning of the new station.

In November, 1926, the station building which is situated on the Provincial Government wharf was completed and officially opened by Mr. J. J. Cowie in the presence of the Western Sub-executive Committee and representatives of the industry. The building cost approximately \$14,000, of which \$5,000 was donated by the Provincial Government, who also granted a free site.

The building is sixty feet long by thirty-six feet wide. It is two stories high and is surmounted by a large easily accessible attic which is used for storage purposes. The main floor is concrete covered, and will eventually be partitioned off to form a museum, a laboratory for heavier apparatus, and a work shop. The second floor contains offices, library, chemical laboratory, balance room,



constant temperature room, biological laboratory and photographic dark room. It is equipped throughout with hot water heating, electric service for light and power, gas, hot and cold water, and compressed air. The station also possesses a thirty-four foot gasoline launch for the collection of material.

### *Investigations*

*Refrigeration.*—Refrigeration presented many urgent problems to the industry who were desirous of learning more of the brine freezing system. Accordingly arrangements were made with the Canadian Fish and Cold Storage Co for the erection of a small brine freezing plant on their premises at Seal Cove. Funds being limited, an existing wooden tank in which the Company had unsuccessfully tried to use the brine freezing method, was remodelled. It was found necessary to thoroughly insulate the tank, to fit it with a sheet metal lining, to install a new system of brine circulation and cooling coils, and to equip it for freezing by the method of indirect immersion, using calcium chloride brine at a temperature of  $-10^{\circ}\text{F}$ . By this means it was found possible to reduce the freezing time of a 30-pound fish from forty hours (which was usual in the sharp freezer) to two hours. It was hoped to be able to obtain accurate cost data from this machine, but owing to its location within the plant and to other adverse circumstances over which we had no control, this was found to be impracticable.

The installation proved highly successful in convincing the trade, which was at first skeptical, of the feasibility of the method, and of the marked superiority of the brine frozen product. At a demonstration which was attended by the leading men of the Industry, it was shown that to the naked eye, brine frozen halibut is almost indistinguishable from unfrozen fish, while the appearance of air frozen halibut is markedly inferior and extremely obvious. It was also demonstrated that upon squeezing a thawed out steak of air frozen halibut, 20 per cent of its weight was lost in the form of escaping juices. A similar experiment with brine frozen fish resulted in a loss of 5 per cent, while fresh unfrozen fish lost only 3 per cent of its weight. The reason for this loss was then shown by a microscopical examination of the muscle fibres which in the case of the air frozen fish were badly ruptured, and showed large intra cellular distentions, while in the brine frozen and fresh fish the sarcolemma was intact with a marked absence of holes and spaces in the muscle substance.

Having demonstrated this to the trade, it was decided to conduct an experiment in marketing, and thus to find the reaction of the retailer and the public to the new product. As a preliminary, a small quantity of halibut (4,000 pounds) was frozen in the new machine, and stored for about one month, after which it was shipped in 200- and 300-pound lots to various dealers in Montreal, Toronto, Winnipeg and Chicago. The fish were placed on the market in the thawed out condition and sold in competition with fresh unfrozen fish. In some cases it is known that it was sold as fresh fish at fresh fish prices, and in every case the dealer noted the marked superiority of the new product.

This exploratory work indicates that a similar effort on a larger scale would do much towards creating a demand for the new product, and at the same time points to the necessity of accurate data with regard to costs, which in these experimental stages are bound to be a little in excess of the sharp freezing method.

The station is at present occupied with the design of a new automatic type of freezer which can handle all types of fish with a minimum of depreciation and labour cost. This machine will be installed in a manner that will make possible the obtaining of all necessary engineering data as to cost of installation and cost per pound of fish frozen.

*Oils.*—The dog-fish (*Squalus sucklii*) is plentiful on the Pacific coast, and on account of its voraciousness has become a pest. Many attempts have been

made to utilize it, and thus protect more valuable food fish. Plants erected for the production of dog-fish meal and oil have never been very successful, largely because of the inadequate methods used.

The station has undertaken an examination of the production of oil and meal with a view to so improving the methods as to make the reduction of dog-fish profitable. This work is being conducted by Mr. H. N. Brocklesby.

A thorough chemical examination of the oil has been made and forwarded in a paper to the Journal of the Society of Chemical Industry, for publication. Amongst other things it was found that this oil lends itself very rapidly to sulphonation, a process which makes it very valuable to the leather and tanning industries, which have not used it heretofore because of its objectionable odour. This however is removed by improved processing, which also makes it more valuable for use in outside and heat resisting paints.

When hydrogenated, this oil forms an odourless, tasteless pale yellow edible fat, which could be used for food purposes. This fat could be used in the manufacture of fine toilet soaps, while the unhydrogenated oil is valuable for the production of washing powders and laundry soap. Thus numerous new markets for the oil might be found as a result of improved methods of manufacture.

Examination of the vitamin potency of the oil shows that dog-fish oil is more potent in vitamin A than is standard medicinal cod liver oil as prepared by Park Davis Co. This work was made the subject of a paper which has been forwarded to the Journal of Biological Chemistry for publication. An assay of Vitamin D is now being undertaken, both at the station and at the Manitoba Agricultural College, where Mr. F. G. Hutt is experimenting with young poultry. The results obtained will first be published in technical form, after which they will be embodied in a more general paper for the use of the trade.

*Survey of Fish Plants.*—During the summer of 1926, Mr. Pillsbury was appointed to conduct a survey of the methods and processes, which are in use at the various fish handling plants. The time at his disposal permitted of his covering the plants in the vicinity of Prince Rupert and the Skeena river.

*Museum.*—Work has also been started towards the establishment of a museum, which is to include models illustrating the evolution of methods of processing, especial emphasis being placed on the most recent advancements. Specimens of marine life from local waters have been collected, and an effort is being made to enlist the aid of halibut fishermen in this connection. Two specimens worthy of note have been obtained as a result of this.

A handsaw fish (*Plagyodius aesculapius*) caught off Anthony isle in 40 fathoms, and a prow fish (*Zaprora silenus*) caught off Sitka sound, in 60 fathoms.

#### *Season of 1927-28*

During the coming season the work planned is as follows:—

The development of a small commercial brine freezer embodying automatic features which make possible the freezing of all types of fish at low cost, and the gathering of cost data.

An experiment in the marketing of brine frozen fish.

Further study of the physical and chemical changes which occur in fish proteins during freezing and thawing.

A study of the conditions which lead to the discoloration of halibut in the holds of fishing vessels.

A study of the chemical changes in fish oils and fats which accompany the discoloration known as "rusting."

A study of the vitamin content of dog fish liver oil and its seasonal variations with special reference to Vitamin D.

A study of the glue content of reduction plant waste liquor and of a method for its recovery.

If time permits, studies of the chemical characteristics of pilchard and salmon oil will be made.

#### INVESTIGATIONS IN THE PRAIRIE PROVINCES

Professor C. H. O'Donoghue, of the University of Manitoba, had under his direction certain investigations in the Prairie Provinces, particularly in the Jasper Park lakes. During the summer of 1926 Dr. F. B. Adamstone was appointed as an Investigator in the Prairie Provinces. He shortly resigned and was succeeded in the fall by Mr. A. Bajkov.

Those engaged in these investigations in 1926 and their problems were:—

Mr. A. Bajkov: Fishes and plankton of the Jasper Park lakes. Limnological investigations on the Quill lakes in Saskatchewan and lake Winnipeg.

Miss Ruby Bere, University of Manitoba: The leeches of the Jasper Park lakes.

Mr. Alan Mozley, University of Manitoba: The molluscs of the Jasper Park lakes.

Mr. Ferris Neave, University of Manitoba: The insects of the Jasper Park lakes.



## APPENDIX No. 3

## NATURAL HISTORY REPORT

By Mr. ANDREW HALKETT, *Naturalist*

The main subjects summarized in the report, and which are drawn upon from material contained in previous detailed official reports, are these:—

Scallop investigations made (1) in Mahone Bay, (2) in the vicinity of Ecum Secum.

Oyster investigations made (1) in Tracadie Harbour, (2) in Ostrea Lake, (3) in various localities in Nova Scotia and New Brunswick in conjunction with other work.

An investigation as to how the so called slipper limpet (*Crepidula*) effects the oyster.

An examination of the condition of the quahaugs as they occur from Shediac to the limits of their range at Buctouche Bay, owing to an alleged dying of the quahaugs at Buctouche.

## SCALLOP INVESTIGATIONS MADE IN MAHONE BAY

There was a double purpose to be served in making the scallop observations last year in Mahone Bay. One purpose concerned the usual annual investigation as to the condition of the scallop, so as to observe to what extent it has been recovering from the strain put upon it a number of years ago; and the other was to make a large collection of the shells so that, under the supervision of Doctor Huntsman, the apparent ages of the scallops as they run in sizes may be determined.

The amount of time devoted to the investigation was consequently greater than that of any previous occasion, and the fortuitous collecting of a large series of the shells seemed to manifest, through the proportion in numbers of scallops below four inches in size to those from four inches and over, that the scallops were recovering from the strain.

In this way the time devoted to collecting and examining the shells supplemented the regular investigation, and brought certain things to light as to what the actual state of the scallop now is in Mahone Bay.

Two separate collections of the shells were made: first during June and July, and second after the interval of one month in August.

Under the first collecting (June and July) the proportion of scallops under four inches to those from four inches and over was nearly two-thirds of the whole.

Under the second collecting (August) the proportion under four inches was less than that of those from four inches and over, but this might be an indication that in the intervening time the scallops were gaining in size. The percentage of the smaller ones was  $37\frac{1}{4}$ —that of the larger  $62\frac{1}{4}$ .

Under the entire time of the collecting the proportion under four inches was about  $51\frac{1}{2}$  per cent, and of those from four inches and over about  $48\frac{1}{2}$  per cent.

But there is something else to be considered in any attempt to ascertain whether or not the scallop resource in Mahone Bay is undergoing recovery.

The observations were entered upon from three different starting points, viz:—Indian Point, Ernst Island, and Tancook, and the proportion of the smaller scallops to the larger ones, according to those starting points, differed very materially.

The first investigation starting from Indian Point was made on the 24th and 28th of June, and also on the 16th of July, and out of two hundred and ninety-six scallops obtained, two hundred and forty-eight were below four inches and forty-eight were from four inches and upwards in size.

The first investigation starting from Ernst Island was made on the 15th of July, and out of seventeen scallops obtained two were below four inches and fifteen were from four inches and upwards in size.

The first investigation starting from Tancook was made on the 8th and 12th of July, and out of eighty-nine scallops fourteen were below four inches and seventy-five were from four inches and upwards in size.

This comparison tends to show that the real recovery, as manifested by the numbers of small scallops, is at the Indian Point region, which is situated at the western end of the bay. From the Tancook starting point there were only fourteen scallops below four inches out of eighty-nine, and from the Ernst Island starting point, intermediate between Indian Point and Tancook, only two below four inches out of seventeen.

The observation, however, made at Ernst Island was apropos or by the way on return from Tancook, but it led to a fuller observation at that place when the second investigation was made.

The second investigation starting from Indian Point was made on the 16th of August, and out of one hundred and eighty-seven scallops obtained, one hundred and nineteen were below four inches and sixty-eight were from four inches and upwards in size.

The second investigation starting from Ernst Island was made on the 20th and 21st of August, and out of seventy-two scallops obtained six were below four inches and sixty-six were from four inches and upwards in size.

The second investigation starting from Tancook was made on the 25th and 26th of August, and out of one hundred and twenty-six scallops obtained eighteen were below four inches and one hundred and eight were from four inches and upwards in size.

By paralleling the smaller and larger scallops obtained on the two occasions from the three starting points an idea may more readily be had of that which is embodied in the above, thus:—

Indian Point		Ernst Island		Tancook	
Smaller	Larger	Smaller	Larger	Smaller	Larger
1st.....248	48=296	2	15=17	14	75= 89
2nd.....119	68=187	6	66=72	18	108=126

Any considerable difference in the percentage of the small scallops pertains to those obtained from Indian Point as a starting point. On the first occasion the percentage stands almost eighty-four, and on the second almost sixty-four. As the number of the small ones of those from Ernst Island and Tancook starting points is inconsiderable they are taken together. On the first occasion the percentage stands about fifteen, and on the second about twelve. This fall in the numbers of the small scallops may be accounted for owing to an increase in size in the intervening time.

Two misplaced scallops are left out of account in the above estimates.

TABULATION OF RAKINGS MADE IN JUNE AND JULY

Rakings	Males	Females	Totals
1.....	7	7	14
2.....	12	13	25
3.....	3	3	6
4.....	19	29	48
5.....	20	16	36
6.....	33	29	62
7.....	16	17	33
8.....	0	0	0
9.....	4	7	11
10.....	6	10	16
11.....	12	6	18
12.....	15	3	18
13.....	15	9	24
Rake fouled odd.....	2	.....	2
14.....	2	1	3
15.....	6	4	10
16.....	2	2	4
17.....	6	3	9
18.....	12	12	24
19.....	19	20	39
	211	191	402

TABULATION OF RAKINGS MADE IN AUGUST

Rakings	Males	Females	Totals
20.....	38	35	73
21.....	14	10	24
22.....	42	48	90
23.....	2	9	11
24.....	4	3	7
25.....	2	3	5
26.....	1	2	3
27.....	9	17	26
28.....	1	5	6
29.....	5	4	9
30.....	3	2	5
31.....	1	0	1
32.....	38	34	72
33.....	5	2	7
34.....	1	0	1
35.....	24	21	45
	190	195	385



Tabulation showing the numbers of yards over which the rakes were drawn and the number of scallops obtained in each raking. \* indicates that two rakes were used—otherwise one rake.

Rakings	Scallops	Yards
1.....	14	300
2.....	25	200
3.....	6	300
4.....	48	250
5.....	36	200
6.....	62	200
7.....	33	300
8*.....	0	400
9*.....	11	400
10*.....	16	600
11*.....	18	200
12*.....	18	400
13*.....	24	500
Rake fouled odd.....	2	.....
14.....	3	200
15.....	10	200
16.....	4	100
17.....	9	300
18.....	24	300
19.....	39	300
20*.....	73	800
21*.....	24	600
22*.....	90	500
23.....	11	125
24.....	7	125
25.....	5	125
26.....	3	200
27.....	26	200
28.....	6	200
29.....	9	200
30.....	5	250
31*.....	1	400
32*.....	72	450
33*.....	7	150
34*.....	1	300
35*.....	45	300
Add—misplaced.....	2	.....
	789	10,575

## SCALLOP INVESTIGATIONS MADE IN THE VICINITY OF ECUM SECUM

These investigations were commenced on the 9th and completed on the 15th of September, but the occurrence of the scallops at Ecum Secum, according to what I had been led to anticipate finding, did not come up to my expectations. I found there was nothing really special about the occurrence of the scallop there, and doubtless scores of places might be found to be equally as good.

The following is a summary of the rakings, showing the numbers of yards over which the rakes were drawn and the number of scallops obtained in each raking:—

Rakings	Scallops	Yards
1 g.c.....	0	440
2 o.f.....	2	400
3 o.f.....	0	600
4 g.c.....	33	500
5 g.c.....	15	550
6 h.c.....	0	400
7 h.c.....	0	250
8 o.f.....	0	600
9 h.c.....	0	200
10 h.c.....	8	300
11 h.c.....	3	300
12 h.c.....	34	400
13 h.c.....	19	350
14 g.c.....	18	375
15 g.c.....	0	250
16 g.c.....	74	500
17 o.f.....	1	400
18 o.f.....	0	650
19 o.f.....	0	700
20 o.f.....	0	50
21 o.f.....	0	350
	207	8,565

The following is an analysis of the above:—

In the open, facing the harbour and village of Ecum Secum, out of 8 rakings (viz. 2, 3, 8, 17, 18, 19, 20, 21) drawn over 3,750 yards (viz. 400, 600, 600, 400, 650, 700, 50, 350) only 3 scallops were obtained.

Under more shelter on the Halifax county side, out of 7 rakings (viz. 6, 7, 9, 10, 11, 12, 13) drawn over 2,200 yards (viz. 400, 250, 200, 300, 300, 400, 350) 64 scallops were obtained.

Under more shelter on the Guysboro county side, out of 6 rakings (viz. 1, 4, 5, 14, 15, 16) drawn over 2,615 yards (viz. 440, 500, 550, 375, 250, 500) 140 scallops were obtained.

To facilitate a better understanding of the tabulation, symbols are placed against the numbers of the rakings: o.f. signifying, in the *open facing* the harbour; h.c. on the *Halifax county* side under more shelter; g.c. on the *Guysboro county* side under more shelter.

It will be seen, as shown below, that the total number of scallops obtained for Doctor Huntsman's purpose (in the procuring of which  $10\frac{7}{8}$  miles were dragged) was 996 or four shells short of 1,000. This means approximately 1,000 shells or 2,000 valves, thus:—

Mahone Bay—June and July 402: August 385:—Misplaced 2.....	= 789
Ecum Secum.....	= 207

996

Whilst engaged in oyster observation at Ostrea lake I was shown a scallop shell  $2\frac{3}{10}$  inches in length which had been taken with a spear at Widgeon Gut about the 15th of May.

#### OYSTER INVESTIGATIONS MADE IN THE WEST ARM OF TRACADIE HARBOUR

In the season's work nothing proved to be more interesting than the examination as to the occurrence of the oyster in Tracadie harbour.

The data in full of this investigation are given in a previous report, but I now give a resume or condensed statement concerning the oyster as it exists in this harbour.

The body of the harbour runs off into innumerable irregularly shaped branches or arms, the most important of which as concerns the oyster is known as the West arm.

This arm has a length of about one and a third nautical miles and breadths of great irregularity, in places varying say from a fourth to half a mile. Its maximum depth may be placed at about ten feet. There is little tidal rise and fall, owing to the small entrance space connecting the arm with the main body of the harbour, which in turn is affected by the narrowness of the main entrance connecting the harbour with George Bay. The nature of the sea bed easterly is mostly composed of mud: westerly there are stones, but mud heavily charged with diatoms, is conveyed by streams (of which there are three, besides which there is a good spring reputed never to go dry) or drained off the land, and discharged practically all over the area, which is situated in an undulated spot, the land gracefully sloping on all its sides.

Observations of the West arm were made when in boats out on the water, and also by looking down upon it from a high altitude. In the latter way such an excellent view of the arm and the surrounding landscape was had that a better idea was afforded of the topographical features of this beautiful spot, and the observation of its physical or topographical environment, where the water is held by the surrounding undulated land as in a basin, was of value in my study of the oyster as it lives and thrives in this choice arm of Tracadie harbour.

As to the oyster itself, favoured as it is by much that conduces to its welfare, it is free from a great deal that in many other localities is detrimental or injurious to it, but at the same time there are, according to the present natural constitution of the arm, certain things that hinder it from being all that it might be brought to be.

The Tracadie oysters are generally more or less elongated in shape, whitish in colour and overlaid with mud, and they are almost entirely devoid of any extraneous objects. Starfishes, those inveterate enemies of the oyster, are apparently absent, a plentiful supply of fresh water renders the water brackish, and there is an abundant supply of food composed of numerous kinds of diatoms.

There is, however, over a very considerable portion of the arm, especially at the eastern portion, a deficiency of objects upon which the spat can attach itself, and this condition involves a question which has been dealt with in detail in my previous oyster report.

One striking phenomenon which this condition occasions is that many of the oysters are simply lying loose upon the sea bed without being attached to any objects at all, and the waste undoubtedly engendered owing to this is fully pointed out in the above mentioned report.

My work in the evenings was devoted to an examination of the oysters as they lay exposed in the shell valves. As the oysters in general lay open before me I saw that they were compact and full. This was on account of their having had time to recover from the impoverished appearance that shellfish in general assume during the spawning period.

But although the oysters were practically spawned out, in some there were still a few sperms remaining, but in none did I see any eggs. This was something not altogether new to me, for as late as October in the previous year at Buctouche I came across a similar instance of an oyster having sperms still in the gonad. The American oyster is protandrous (which signifies that it is first male) in so far as that the gonad is heavily charged with sperms before it is charged with eggs, but I have reason to know through close examination that after the eggs are discharged (a function which is performed in a relatively short time) many of the individual oysters still have the gonad charged with sperms, and there is I believe in regard to this question room for a close and special study.



## OYSTER INVESTIGATIONS MADE IN OSTREA LAKE

The general features of Ostrea lake differ entirely from those of Tracadie harbour. It is a sort of marine pond, constituting an arm of Musquodoboit inlet, being connected with the main inlet by a narrow channel, yet it is also in its own way a natural habitat of the oyster.

This pond is at least a mile and a half long by at least a quarter of a mile broad on an average. The composition of the sea bed is largely sand and rock, depths taken were two and one-half, four and six feet, and the highest rise of the tide is about one foot. It is practically full of heavy growths of eel-grass, mare's tails, and sea-weeds. A considerable stream, which issues from a fresh water lake and empties into the pond, is the principal source of supply of fresh water, but there is another insignificant stream at the further end of the pond which is simply fed by water drained off the land.

The oysters of Ostrea Lake are of good quality, but the dense growth of eel-grass, etc., is an obstacle in the procuring of them. Samples were obtained, however, at three spots in particular, and if means could be devised of keeping down the dense vegetative growth, I am satisfied that Ostrea Lake would afford, according to its size, a good oyster supply from a limited area.

OYSTER INVESTIGATIONS MADE IN VARIOUS LOCALITIES IN NOVA SCOTIA AND  
NEW BRUNSWICK

These are divisible into two separate investigations, viz., (a) Caribou River, N.S., and (b) that part of the Strait of Northumberland, N.B., embraced between, and including, Shediac and Richibucto.

*(a) Caribou River, Pictou County, N.S.*

Little could present a greater contrast than is to be seen in a comparison of the Caribou River oysters with those of Tracadie Harbour, and the difference in their appearance is very marked. Those of Tracadie Harbour were found to be almost entirely free of objects of any kind attached to them, whereas those of Caribou River had great numbers of very small oysters attached to the larger ones. This was so much the case, and there was such a close contact of the small ones on the large, which were often so closely and intimately attached and massed together to the large ones, that it seemed to me it would be impossible to remove them without incurring great waste.

Great numbers of fine oysters were seen and examined at Caribou River, and that much profitable fishing had been engaged in was manifested by the heaps of dead oyster shells which were seen along the bank of the river.

*(b) That part of the Strait of Northumberland Embraced Between  
Shediac and Richibucto*

These investigations were largely made at wharves, canneries and packing-houses, and as I was brought in contact with parties engaged in the oyster business, through those means I gained a widened conception of the condition of the oyster as it exists between the aforementioned limits, and indeed of oysters brought in from places beyond those limits.

The following is a summary of the visits made, and wherever I went or in whatever way the examinations were made, at wharves, in barrels, or in the process of canning, in general I beheld multitudes of oysters in excellent shape.

A visit was paid to Doiron's warehouse at Shediac, where a large quantity of fine oysters which had been obtained at Shediac Bay and Aboushagan were seen.

The oysters at Bilodeau's cannery and also those at Cormier's cannery at Cocagne were inspected.

The oysters at the four packing houses at Buctouche were also inspected, at all of which there were oysters from Buctouche Bay, and at two of them oysters from the Richibucto district.

A visit was paid to Cyrille Maillet's packing house at Buctouche Bay which is distant a few miles from Buctouche town, and where oysters from Buctouche and Kouchibouguac, a place about six miles beyond St. Louis, were seen.

Oysters from Richibucto and Kouchibouguacis rivers, or neighbouring waters, were examined at C. Wilkinson's warehouse at Richibucto.

#### AN INVESTIGATION AS TO HOW THE SO-CALLED SLIPPER LIMPET (*CREPIDULA*) AFFECTS THE OYSTER

This investigation was incidental to the oyster investigations.

It was an outcome of a correspondence of about a year ago between the Canadian Trade Commissioner of Bristol, England, and the Director of the Commercial Intelligence Service, and between the latter and this Department.

The matter in question concerned what effect the slipper limpet which attaches itself to the outside of the shell of the oyster, has upon the oyster, and it was decided that I could give the question attention in so far as it would not infringe upon that which was more immediately before me to be engaged in.

I found that instead of my search for *Crepidula* impeding the work devoted to the condition of the oyster at respective places, it was more auxiliary to it, as in any case I was constantly on the lookout for whatever extraneous objects were adhering to the oysters, and I also found that it is apparently very locally distributed, so much so that there are very many places where the oyster occurs without any evidence that at those places *Crepidula* occurs.

There are two distinct species of *Crepidula* at our Atlantic coasts, one of which is smaller and much flatter than the other, and of which only a few specimens were come across.

The larger species exists in great abundance locally. It was first come across casually whilst I was engaged in my scallop observations at Mahone Bay. On a few occasions I found it on scallops at one particular place of that bay, but there was no indication that it was there in plenty.

From that time on, and throughout rather an exhaustive examination of oysters at Ostrea lake, Tracadie harbour, Caribou river, Shediac, Cocagne, Buctouche, and Richibucto, *Crepidula* was found only at Cocagne and Buctouche.

At those two places it was found in great abundance, and not only was it found directly on the oyster, but as there were individuals of various sizes, smaller ones often adherent to the full grown ones or smaller again to these.

I do not see that actually the slipper limpet does the oyster the slightest harm. At the most it is only a competitor of the oyster. Both feed on diatoms, and as there is wherever I have investigated a plenteous supply of diatoms to meet the needs of the two there seems to be nothing to indicate that the slipper limpet is in anyway a parasite, and if not then it would seem that no real harm to the oyster can be occasioned through it.

#### AN EXAMINATION OF THE CONDITION OF THE QUahaUGS AS THEY OCCUR FROM SHEDIAC TO THE LIMITS OF THEIR RANGE AT BUCTOUCHE BAY

This examination was occasioned through an alleged dying of the quahaugs at Buctouche, and as I have frequently been approached by a similar report I gave the matter my close attention.

What I found was that there are more dead quahaug shells than living quahaugs in Buctouche Bay, which might be accounted for through the

accumulation of the shells over a relatively long period of time, but as to the quahaugs themselves I found them to be in good condition.

Probably the number of men who have engaged in fishing in that bay, and the number of quahaugs that have been taken has been more than the resource could bear, but that they have been carried off through an epidemic, which was reported to be the cause of the trouble, appeared not to be substantiated by anything I was able to observe.

As the trouble was alleged to have extended to Cocagne, I made a close examination of the condition of the quahaugs as they occur over the entire area from Shediac to its limits at Buctouche Bay, and wherever I went I found them to be in first class condition.

My oyster and quahaug investigations over this particular part of the strait were made together, and the condition of the one was equally as good as that of the other. There was nothing wrong with the oysters, and I heard nothing as to their having been visited by an epidemic. Yet in all probability an epidemic among the quahaugs would have affected them too.

In the course of the fiscal year various natural history questions were referred to me for replies. These were from Departments of the service or from private individuals, and the answers were submitted in letters for signature or as memoranda. Now and again letters addressed to myself reached me when engaged in my work in the Maritime provinces, and answers to such were sent to the parties as well as, under the circumstances, my memory served me.



## APPENDIX NO. 4

REPORT ON FISHWAYS AND REMOVAL OF OBSTRUCTIONS, BY  
CHAS. BRUCE, FISHERIES ENGINEER

The following report furnishes in detail information regarding inspections, construction of fishways and removal of obstructions to the ascent of fish.

## NOVA SCOTIA

1. Mersey River, Queens County.—Improvements were made to the fishway at Potanoc Dam by the construction of a concrete wing wall to lead fish into the entrance.

A low dam was built at the outlet of the overflow from the power house flume dam at Cowies Falls to prevent salmon from ascending this stream, where they became stranded on the flow being shut off.

2. Hubbards River, Halifax County.—An opening was cleared through an old unused dam to allow fish to pass.

3. Belfrey Gut, Cape Breton County.—The passage from the sea at this location fills up at intervals due to heavy storms shifting the gravel forming the shores, the smelt fishery being seriously interfered with thereby. An opening was made through the bar, allowing smelt to enter.

4. Nictaux River, Annapolis County.—Some work was done on the falls on this river last year. The expenditure this year was for continuation of the former work and included blasting and the construction of concrete wing dams to provide a passage for salmon.

5. Barrys Brook, Lunenburg County.—Removal of obstructions consisting of debris, logs, etc.

6. Grahams River, Inverness County.—Removal of obstructions consisting of log jams filled with debris.

7. Lamey's Brook, Inverness County.—Removal of obstructions consisting of log jams and debris.

8. Salt Brook, Inverness County.—Removal of obstructions consisting of debris piled in by freshets.

9. McLennan's Brook, Inverness County.—Removal of log jams and debris which obstructed passage for fish.

10. Alder Brook, Inverness County.—Removal of obstruction to fish consisting of debris.

11. McKenzies Brook, Inverness County.—Removal of obstructions consisting of jams of logs and debris.

12. Medway River, Queens County.—Repairs to the channel leading to the fishway at Salters Falls.

13. Meadows Brook, Cape Breton County.—Removal of obstructions consisting of debris, logs, etc.

14. River Phillip, Cumberland County.—Repairs to foundations for racks to prevent the ascent of salmon into the tailrace and waste gate, and setting racks.

15. Porters Lake, Halifax County.—Opening of a passage through bar to permit the passage of smelt.

## NEW BRUNSWICK

1. Magagadavic River, Charlotte County.—Preparation of plans for a fishway over falls at mouth of river.

2. Pocologan River, Charlotte County.—Blasting and construction of concrete wing dams to provide a fishway over falls.

3. New River, Charlotte County.—Blasting of falls to improve passage for salmon.

4. Black River, St. John County.—Blasting of falls to improve passage for salmon.

5. White Marsh Creek, Carleton County.—Examination of stream and measurements of discharge.

#### PRAIRIE PROVINCES

Owing to the unsatisfactory condition of numbers of fishways in dams in Prairie Province rivers an inspection of the more important was made. Following the inspection I interviewed the Chief Engineers of both the Canadian National and Canadian Pacific Railways and arranged with them to construct new fishways in the dams owned by the railways.

Designs for fishways have since been furnished to the Canadian National Railways for Gravelbourg river, Saskatchewan, Ochre river, Pipestone river and Vermilion river, Manitoba, and to the Canadian Pacific Railway for Vermilion river, Alberta, and for two fishways on the Whitemud river at Gladstone and Westbourne, Manitoba.

Due to the lateness of the season, inspections were confined this year to the more important streams but it is the intention to advance this work further as opportunity permits.

#### BRITISH COLUMBIA—REPORT OF J. McHUGH, RESIDENT ENGINEER

Expenditures in connection with the removal of obstructions to the ascent of salmon in the streams of British Columbia during the calendar year 1926 were considerably lighter than they have been for several years.

The only major obstructions reported during the year were those at Stamp River Falls, Vancouver Island, and the Bridge River Falls on the Fraser River. At each of these points it became necessary in consequence of the accumulation of sockeye and their inability to proceed further upstream naturally, to devise means whereby they could be safely transported to the smooth waters above the falls. These difficulties were satisfactorily overcome and large quantities of salmon were carried by hand and placed safely above the obstructions. Throughout this work it became very apparent that an early endeavour should be made in each case to overcome these natural obstructions by the construction of suitable fish ladders. Surveys were made and plans prepared for fish ladders at each point. These plans have already been approved by the Department, and the necessary authority has been granted to proceed with their construction during the year 1927 just as soon as conditions are suitable.

It is expected that the work outlined for the Stamp River Falls will satisfactorily and completely relieve that situation. The work outlined for the Bridge River Falls on the Fraser River is, however, of a much smaller nature, and is only designed to alleviate the serious condition which exists at extremely low water when salmon undoubtedly cannot proceed further. The general situation at the Bridge River Falls and at Hells Gate is to receive during the coming year, close attention by a body of Departmental Engineers, who will advise the Department when their studies have been completed. There has been so much said both for and against proposals suggested by the Engineering Service of this Department that in view of the extreme gravity of both these situations and the tremendous issues at stake, the Department has wisely decided to bring other Departmental and Provincial Government engineers into the question, so that there may be no doubt whatever that the recommendations

made by this body of Engineers will be the best possible under the circumstances.

The minor obstructions which were from time to time reported and which in general consisted of accumulated masses of logs and rocks and other debris, were all dealt with at the proper time. Local labour was used entirely for these smaller works, which were generally supervised by the local Overseer or Guardian. As a result, the streams affected were all restored as far as possible to their normal conditions and the fish entering them on their ascent were enabled to proceed to their spawning grounds without further hindrance. The names of all the streams on which work was performed, together with the amounts expended in each case is appended herewith:—

Stream	Nature of Work	Expenditure
Dean river.....	Removal of obstructions.....	\$ 23 75
Coldstream.....	" ".....	28 00
Indian river (Graham reach).....	" ".....	52 36
Coal creek.....	" ".....	74 00
Bush creek.....	" ".....	24 00
Alouette river.....	" ".....	102 00
Alpha bay.....	" ".....	51 10
Juskatla Inlet (Masset).....	" ".....	57 50
Chewhat lake.....	" ".....	52 00
Thames creek.....	" ".....	2 00
Oke-over-ara.....	" ".....	69 37
Trout lake (Gerrard).....	Inspection.....	99 79
Eagle river (Stillwater).....	" ".....	11 00
Frosst Creek (Cultus).....	" ".....	24 75
Okanagan fishway.....	" ".....	31 95
Fraser river (Hells Gate).....	" ".....	17 90
Fraser river (Bridge river).....	Inspection and transporting fish over falls..	217 92
Stamp river.....		1,606, 02

The only fishways constructed during the year were those at the outlet of Prospect lake, Vancouver island, where some years ago, two dams were constructed by the British Columbia Cement Company, Limited, for the purpose of maintaining sufficiently high water throughout the year for the carrying on of the industry throughout the year. Neither of these dams had ever been furnished with suitable fish ladders and in consequence of representations made by the Victoria Fish and Game Association an arrangement was reached whereby this association and the cement company would jointly provide the necessary funds for their construction. Plans and estimates for these structures were prepared in this office and the works completed in a very satisfactory manner. Reports from the ground indicate that trout are able now to proceed into Prospect lake to their spawning grounds.

#### COWICHAN LAKE HATCHERY

Certain necessary work in connection with renewals and repairs to the Cowichan Lake hatchery were performed during the year. New floor joists and a complete new floor in the hatchery building were provided, together with a new head tank. The floors of both hatchery verandahs were also renewed and the foundation of the superintendent's residence replaced. An office was also provided for the superintendent in the upper story of the hatchery building. The total cost of this work amounted to the sum of \$433.93 and the work was performed by local labour under the direct superintendence of the engineers.

#### SKEENA RIVER HATCHERY

A new rock filled timber crib 95 feet in length 8 feet wide and 6 feet high was constructed on Granite creek immediately above the main intake. Peeled cedar logs and iron drift bolts were used in this construction. Foundations



were properly prepared and large quantities of brush used with the rock filling. The heavy spring freshets in this stream are responsible for the damage caused from time to time and the construction of this crib was necessary to conserve the water supply of the hatchery, the natural tendency of the stream being to gradually work to the opposite bank, away from the intake. The total cost of this work amounted to the sum of \$912.35 and was performed by local labour.

#### PEMBERTON HATCHERY

The work performed at this establishment during the year was for the purpose of deflecting the Birkenhead river from its threatened erosion of the Pemberton hatchery grounds. A large log jam was removed and a by-pass excavated through heavy boulders in the river, thereby relieving the pressure on that side of the river on which the hatchery is built and reducing the danger from wash and scour. This work was performed at the cost of \$531.76 under the direct supervision of the engineers.

#### GERRARD HATCHERY

A careful inspection of the conditions on Trout lake adjoining the Gerrard hatchery was made during the year in company with the Public Works engineer for the Nelson district with a view to dealing with the condition of drift logs on Trout lake which have been and are still a continual menace to the hatchery fence and also to the small boats which ply on the lake. It was agreed that the most satisfactory method of dealing with the condition was to boom these drift logs in certain sheltered places on the lake shore and the Public Works Department has made recommendation for an annual grant to be made for this purpose from year to year, until the danger of the situation has been overcome.

The following work for the Biological Board occupied a considerable amount of the engineers' time during the year.

#### COUNTING FENCE, CULTUS LAKE

The annual report of the Engineering Branch for the year 1925 contained a detailed description of this counting fence which had only been partially completed and which it was then expected would be finished early in the year 1926, in order that it might be tried out in the 1926 yearling migration. This count was intended to be more or less in the nature of an experiment which would indicate defects which might be remedied during the year so as to assure a correct count of the 1927 migration. The work was completed this year as intended and the operations of counting conducted with the greatest of satisfaction, no defects whatever in the layout being revealed. All of the yearling salmon which passed out of Cultus lake during the spring, were counted without difficulty and the fence has proved itself to be eminently suitable for the purpose for which it was designed. The final cost of this work was slightly under \$3,000.

#### WATER SUPPLY, DEPARTURE BAY, V.I.

The water supply for the Biological Station at Departure bay is procured from the seepage in the neighbouring high ground, which is collected in a storage tank and delivered to the various surfaces by gravity. The storage tank constructed of wooden plank was erected some years ago. This year, on account of its decayed condition, renewal became necessary. In its place a new concrete tank measuring 10 x 10 x 6 ft. with 6-inch walls was constructed and the old tank dispensed with.

New ditches were dug for the purpose of collecting the water and leading it into the tank. These ditches are from three to five feet in depth and are provided with open boxes of 2 x 12 cedar plank laid in the bottom and carefully

covered in. The water supply at this station is more or less precarious, depending as it does, entirely upon the possibility of collecting water from seepage. It is hoped during the coming year to make surveys for the purpose of obtaining data for a more permanent supply from a small lake some distance back in the hills.

#### BIOLOGICAL STATION, PRINCE RUPERT

A commencement was made on the Biological station at Prince Rupert early in the month of August last and the work was carried on successfully to completion in November. The building is of frame construction throughout and measures 60 x 37 feet. The Provincial Government furnished the site and contributed the sum of \$5,000 towards the construction, plans and specifications being prepared jointly by this Department and the Department of Public Works of the Provincial Government. The very latest and most up-to-date procedure was adopted in designing this building, the suggestions of Mr. Finn, of the Biological Board, being largely embodied in the design. The building is constructed on the dock of the Provincial Government wharf in Prince Rupert harbour, that portion directly under the building having been reconstructed for the purpose by the Provincial Government. The ground floor of the building, which is covered with a slab of concrete, contains furnace room and is provided with proper facilities, whereby experiments in fish processing along commercial lines may be carried out. The second floor contains two laboratories, one biological and the other bio-chemical, fitted with porcelain sinks, hot and cold water, services to each, compressed air, gas and power and fully equipped with drawers, cupboard, tables, work benches, fume cupboards, etc. There is also a director's office, library, a stenographer's office, dark room, constant temperature room and balance room. The upper floor is finished for storage purposes and each floor has direct access with the main floor, a cantilever being provided in the ridge for the purpose of lifting heavy materials by tackle from the wharf below. The building is hot water heated throughout and fully provided with all necessary services. It was constructed under contract by Messrs. Mitchell and Currie, contractors at Prince Rupert, at a total cost of \$14,926.99.

A counting fence which was constructed and operated for the season at a total cost of \$1,879 was erected under the supervision of this branch on Eagle river, Shuswap district, about two miles west of Taft. This fence, which was erected for the purpose of counting the numbers of adult sockeye which it was expected would return, as a result of egg planting operations four years previous, was at first constructed of heavy fox wire set into wooden frames in sections and fastened to heavy posts driven into the stream bed. The fence was approximately 250 feet in length, consisting of two wings converging to a trap of standard size and shape, placed securely in the deepest portion of the river channel. Considerable difficulty was experienced maintaining this fence. Unprecedented fall freshets carrying large quantities of drift material washed out portions of the structure which had to be replaced from time to time by sections of picket fence and the continuation of the high water conditions meant continual maintenance to repair breaks as they occurred. The counting operations were, however, conducted satisfactorily. In the light of the experience gained at Eagle river during the year, it is recommended that any counting fences which may be erected in the future shall be provided with foundations somewhat similar to that of the Cultus lake counting fence, thereby eliminating the danger of underseour. This addition will materially increase costs, but will give more efficient results.

In addition to the foregoing, considerable office work has been performed, many plans prepared and additions from time to time to the large scale maps on which are recorded as received such new geographical and fisheries information as furnished by outside offices.

## APPENDIX No. 5

## FISHERIES

## FINANCIAL STATEMENT, 1926-27

Vote No.	Service	Appropriation	Expenditure
		\$ cts.	\$ cts.
240 and 468	Salaries and Disbursements, F.O.....	829,000 00	819,445 97
	Fisheries Patrol Service.....		
	Fisheries Protection Service.....		
241	Building fishways, etc.....	20,000 00	6,401 20
242	Legal and incidental expense.....	2,000 00	895 69
243 and 469	Conservation and development of deep sea fisheries.....	130,000 00	5,920 39
244	Fisheries Intelligence Bureau.....	2,000 00	539 32
245	Inspection of canned and pickled fish.....	26,000 00	25,356 97
246	Fish culture.....	290,000 00	257,645 44
247	International Halibut Commission.....	31,700 00	32,205 80
248 and 470	Marine Biological Board.....	129,000 00	129,000 00
		1,459,700 00	1,277,410 78
17	Civil Government salaries.....	98,460 00	95,989 29
17	Contingencies.....	20,000 00	18,897 78
Stationery	Fishing bounty.....	160,000 00	159,768 10
		1,738,160 00	1,552,065 95
	Gratuities.....		260 00
	Superannuation Fund No. 5 (Act, 1924).....		19 20
			1,552,345 15



STATEMENT OF REVENUE RECEIVED DURING THE FISCAL YEAR, 1926-27, BY PROVINCES

[illegible]

EXPENDITURE, 1926-27  
DETAILED STATEMENT OF SALARIES AND DISBURSEMENTS

Provinces	Inspectors, Overseers and Wardens		Allowances			Gasoline and Oil	Special Guardians		Sundry	Total
	Salaries	Disb.	Auto	Boat	Horse		Wages	Expenses		
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
<i>Nova Scotia</i> —										
General Account.....	11,943 43	1,366 57							401 96	13,711 96
Nova Scotia District No. 1.....	15,240 00	2,277 55	3,200 00	700 00		192 92	12,551 54	49 10	81 35	34,292 46
“ “ No. 2.....	18,030 00	3,069 76	4,000 00	400 00		189 83	6,121 56	420 00	283 76	32,514 91
“ “ No. 3.....	19,359 35	3,674 87	3,886 01				7,239 75	191 87	182 39	34,834 24
Halifax School.....	500 00	3,658 03								4,158 03
<i>Prince Edward Island</i> —										
Prince Edward Island District No. 1.....	65,072 78	14,046 78	11,086 01	1,100 00	300 00	382 75	25,912 85	660 97	949 46	119,511 60
“ “ No. 2.....	9,225 00	1,937 07	1,600 00				690 00	10 75	347 34	13,810 16
	2,730 00	686 75		284 37		254 47	711 00		112 50	4,677 84
<i>New Brunswick</i> —										
New Brunswick District No. 1.....	11,955 00	2,623 82	1,600 00	284 37		254 47	1,401 00	10 75	358 59	18,488 00
“ “ No. 2.....	10,948 87	1,708 98	1,600 00	400 00			2,227 50		171 69	17,212 32
“ “ No. 3.....	19,449 19	2,429 63	4,216 13	1,265 52		155 28	5,700 00		154 61	34,088 79
	8,280 00	1,383 82	800 00	93 55	300 00	108 40	9,388 27		56 35	20,410 39
<i>Quebec</i> .....	38,678 06	5,522 43	6,616 13	1,759 07	300 00	1,005 57	17,315 77	131 82	382 65	71,711 50
<i>Manitoba</i> .....	9,510 00	3,773 26		300 00	656 25		894 60	1,389 50	123 12	16,618 96
<i>Saskatchewan</i> .....	10,939 52	4,300 25	225 00	225 00	1,000 00		645 00	1,184 72	69 17	18,538 66
<i>Alberta</i> .....	10,629 99	5,163 13	300 00	325 00	600 00		2,311 50	1,851 65	210 46	21,391 73
<i>British Columbia</i> —										
General Account.....	19,599 36	1,880 48							3,563 76	25,043 60
British Columbia District No. 1.....	10,636 68	10,897 89	164 40				9,044 00	5,566 14	1,472 95	38,682 06
“ “ No. 2.....	11,835 65	3,611 35					5,815 62	820 95	2,852 71	24,436 28
“ “ No. 3.....	15,030 00	6,999 27					3,568 46	1,043 29	216 26	26,857 28
<i>General Account</i> .....	57,101 69	23,388 99	164 40				18,828 08	7,430 38	8,105 68	115,019 22
									11,817 36	11,817 36

## SUMMARY

Provinces	Inspectors, Overseers and Wardens		Allowances				Gasoline and Oil		Special Guardians		Sundry	Total
	Salaries		Disb.		Auto		Boat		Horse			
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Nova Scotia.....	65,072 78	14,046 78	11,086 01	300 00	382 75	25,912 85	660 97	949 46	119,511 60			
Prince Edward Island.....	11,955 00	2,623 82	1,600 00	284 37	254 47	1,401 00	10 75	358 59	18,488 00			
New Brunswick.....	38,678 06	5,522 43	6,616 13	300 00	1,005 57	17,315 77	131 82	382 65	71,711 50			
Quebec.....	9,510 00	3,773 26	300 00	656 25	894 60	1,389 50	95 35	123 12	123 12			
Manitoba.....	10,939 52	4,300 25	225 00	1,000 00	645 00	1,184 72	69 17	18,588 66	16,618 96			
Saskatchewan.....	10,629 99	5,163 13	300 00	600 00	2,311 50	1,851 65	210 46	21,391 73	18,588 66			
Alberta.....	57,101 69	23,388 99	164 40	.....	18,828 08	7,430 38	8,105 68	115,019 22	115,019 22			
British Columbia.....												
General Account.....												
	203,887 04	58,818 66	19,991 54	2,856 25	1,642 79	67,308 80	12,659 79	22,111 84	393,270 15			





"Curlew".....	261 61	24 18	3 50	80 00	369 29
"Deborah".....	96 45	25 32	12 57	130 00	264 34
"Dorothy N.".....	1,200 00	180 93	29 96	465 40	1,876 29
"Dory".....	130 00	2 30		41 00	173 30
"Dot".....	77 42				77 42
"Dumbo".....	283 87	71 60	20 50	88 50	466 47
"Fetoba".....	492 52	201 64	39 30	786 00	1,522 87
"Eldra".....	1,023 14	285 45	65 20	3 12	2,488 91
"Elk".....	340 54	49 94	5 72	1 55	1,112 00
"Elkhart".....	380 00	64 35	20 49	187 05	502 75
"Esperanza".....	1,048 39	408 70	95 10	2 25	651 89
"Flying Spur".....	907 84	300 18	66 87	8 12	2,081 44
"Gertie W.".....	720 16	289 73	44 43	2 50	2,027 01
"Goodall".....	520 00	80 43	8 25		891 00
"Grizzly".....	711 01	53 31	9 56		1,947 82
"Haslam".....	334 19	27 49	28 55	1 62	1,401 65
"Hubert".....		4 60	0 75		602 98
"Hummingbird".....			2 97		5 35
"Iona".....	400 00	94 85	22 19		2 87
"Ionides".....	593 55	110 70	5 00		123 00
"Isobel W.".....	270 97	36 22	5 00		640 04
"Jean".....	130 00	17 29	1 50	4 00	184 00
"Kiki".....	834 67	169 93	164 18		84 50
"Limit".....	232 36	19 30	2 54		400 69
"Lively".....	393 55	46 20	17 12	3 12	189 79
"Lola".....	193 34	31 86	8 52	0 48	2,292 10
"Mabel".....	144 80	14 80	10 03		1,120 20
"Mary".....	50 72	50 72			71 50
"Megan".....	12 01	12 01	1 95		326 08
"Melrose".....	711 30	134 41	59 28	3 77	128 13
"M. E. Smith".....	950 00	148 07	30 22		585 00
"Myfawny".....	815 33	152 99	50 50	28 00	292 72
"Nancy".....	388 62				245 00
"Nellie".....	638 71			1 52	1,164 69
"Nerets".....	445 64	65 92	7 75		335 77
"Odessue".....	919 71	210 27			285 05
"Oh Boy".....	795 00	193 04			13 96
"Olive".....	503 33	474 60	13 55		1,393 76
"Omar K.".....	660 49	70 20	57 75		485 00
"Onaskino".....	1,175 81	86 65	13 61	4 76	706 15
"Pearl F.".....	61 51	175 31	82 63	0 26	1,834 44
"Pontiac".....	1,067 75	16 90	20 21	0 60	1,110 00
"Reliance".....	1,455 00	109 25	7 77	3 81	315 00
"R.K.".....	140 00	53 92	12 00		198 85
"Robertson".....	74 84	17 53	27 82	9 11	911 23
"Rockanoy".....		22 76	1 96	1 60	366 00
"Rose".....	256 16	11 52	2 84		983 70
"S. and E.".....	463 33	48 00	3 45		2,060 00
		20 70	8 65		2,412 11
					157 50
					744 90
					430 00
					1,280 37
					2,575 81
					1,200 67
					28 50
					114 68
					315 00
					1,504 00
					1,393 60
					2,939 15
					44 00
					203 11
					23 00
					123 41
					39 19
					54 16
					391 81
					78 00
					278 50
					771 18

EXPENDITURE, 1926-1927—Continued  
DETAILED STATEMENT OF FISHERIES PATROL SERVICE—Concluded

Establishments and Accounts	Paylist	Board or Prov'n.	Fuel	Repairs		Supplies		Clothing	Sundry		Total
				Hull	Engine	Engine	Deck		\$	cts	
"Scallop",	102 83	\$	cts	\$	cts	\$	cts	\$	cts	\$	cts
"Sea Bee",	932 58		74 45	5 80		14 14			98 00	230 42	
"Sea Dog",	520 00		321 53	6 05		69 62			992 00	2,315 73	
"Seafarm",	727 50		23 75	77 68		5 03			160 00	710 34	
"Sea Snipe",	455 81		115 61	188 50		26 17			792 00	1,661 28	
"Sisters",	156 67		229 25	24 75		56 82			416 50	1,160 00	
"Skylark",	443 33		14 40	25 82		2 38			49 00	224 01	
"Sophanne",	798 84		174 47	198 05		45 60			138 00	801 40	
"Speedwell",	520 00		211 07	14 00		27 69			707 60	1,746 82	
"S. Queen",	173 87		19 90	32 84		5 53			157 00	702 43	
"Stubbs",	496 67		16 20	110 80		17 80			53 00	260 87	
"Vera S. Fry",	810 33		111 50	77 68		33 75			154 35	796 27	
"Votomac",	146 67		401 26	25 82		55 97			1,111 50	2,382 18	
"Wabash",	898 07		6 25	198 05		7 32			46 00	206 24	
"Wakesia",	984 43		934 64	420 06		148 35			1,230 00	3,207 58	
"Wonder No. 2",	153 33		208 41	3 40		56 49			1,072 00	2,378 29	
"Wonder No. 3",	153 33		42 87	16 89		5 50			47 50	260 59	
Departmental Boats—			31 40						47 50	237 73	
"Anina",	700 00		68 03	5 80		29 07			7 50	7 50	
"Babine No. 1",	700 00		67 28	6 05		40 16			85 15	962 28	
"Black Raven",	1 454 17		478 10	77 68		236 61			96 85	918 81	
"Bonila Rock",	2 555 00		740 57	188 50		30 86			114 63	3,013 09	
"Cloyah",	3 231 00		666 58	24 75		118 34			6 60	3,936 01	
"Cohoe Bay",	1 072 58		649 18	25 82		80 16			4 38	4,439 43	
"Egret Plume",	1 500 00		323 45	198 05		122 83			46 01	2,082 96	
"Elk Horn",	3 420 00		420 06	14 00		55 28			95 45	2,423 37	
"Foam Crest",	4 476 77		513 40	4 35		63 46			11 02	3,997 58	
"Gull Wing",	1 500 00		159 44	32 84		238 87			34 01	5,175 02	
"Hawkeye",	1 372 84		307 71	110 80		28 29			72 48	2,341 89	
"Heron Wing",	1 836 07		563 50	113 05		422 46			6 40	1,924 36	
"Linnett N",	1 357 10		424 84	153 85		13 14			32 19	3,295 42	
"Marlsh",	5 610 33		1 386 14	3 259 17		88 12			12 85	2,171 94	
"Merlin B",	1 294 93		7 34	3 90 75		7 34			292 14	13,449 90	
"Merrysea",	4 500 00		150 43	56 29		235 40			1 946 36	5,603 93	
"Metro",	60 97		24 96	102 28		9 10			202 21	5,603 93	
"Revidis",	2 837 50		330 36	159 10		531 49			30 95	3,17 97	
"Salmo",	950 96		99 56	8 25		75 10			35 21	4,791 59	
"Swan Tail",	4 500 00		621 11	34 55		119 99			119 40	1,284 58	
"Vandis",	6 476 61		493 26	117 82		1 061 17			27 57	5,383 57	
"Vedder River",	3 420 00		320 90	4 10		18 52			203 84	11,069 77	
									10 41	3,850 68	
	94,156 44		18,018 70	5,820 91	4,269 96	5,703 09	1,287 25	1,701 70	29,862 95	164,496 77	



## SUMMARY

Nova Scotia.....	6,544 90	0 72	1,026 25	426 57	240 20	5,327 43	200 75	113 31	37 64	1,230 18	15,147 95
Prince Edward Island.....	4,951 02		193 93	121 07	17 21	327 25	30 67	4 97		1,908 25	7,554 37
New Brunswick.....	6,960 00		1,259 61	65 36	248 08	150 38	49 28	130 17	9 82	657 26	10,259 96
Manitoba.....	10,008 91	2,458 41	5,494 78	293 50	1,312 55	450 07	653 20	227 91	656 46	289 92	21,775 71
British Columbia.....	94,156 44	3,311 21	18,018 70	5,820 91	4,269 96	5,703 09	1,287 25	1,701 70	364 56	29,862 95	164,496 77
	122,621 27	5,770 34	26,693 27	6,657 41	6,088 00	11,988 22	2,221 15	2,178 06	1,068 48	33,948 56	219,234 76

EXPENDITURE, 1926-27  
DETAILED STATEMENT OF FISHERIES' PROTECTION SERVICE

Establishments and Accounts	Paylist	Board or Prov'n.	Fuel	Repairs		Supplies		Clothing	Sundry	Total
				Hull	Engine	Engine	Deck	Stewards		
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts
<i>General Account.....</i>									104 00	104 00
<i>East Coast—</i>										
Arleux.....	20,201 55	5,365 79	8,058 99	5,268 51	971 87	614 07	1,420 53	501 00	1,327 14	44,763 28
Arras.....	21,380 01	5,997 01	8,723 54	4,433 40	2,958 84	2,094 69	691 00	435 80	1,186 96	49,731 81
	41,581 56	11,362 80	16,782 53	9,751 91	3,930 71	2,708 76	2,111 53	936 80	2,514 10	94,495 09
<i>West Coast—</i>										
Givenchy.....	25,089 78	7,120 24	9,829 70	2,521 26	2,697 30	996 47	669 23	812 14	1,520 49	52,303 07
Malaspina.....	29,780 11	7,959 08	12,470 98	2,350 47	1,889 39	674 69	1,024 84	808 52	1,724 89	60,038 90
	54,869 89	15,079 32	22,300 68	4,871 73	4,586 69	1,671 16	1,694 07	1,620 66	3,245 38	112,341 97

## SUMMARY

General Account.....									104 00	104 00
East Coast.....	41,581 56	11,362 80	16,782 53	9,751 91	3,930 71	2,708 76	2,111 53	936 80	2,514 10	94,495 09
West Coast.....	54,869 89	15,079 32	22,300 68	4,871 73	4,586 69	1,671 16	1,694 07	1,620 66	3,245 38	112,341 97
	96,451 45	26,442 12	39,083 21	14,623 64	8,517 40	4,379 92	3,805 60	2,557 46	5,759 48	206,941 06

## DETAILED STATEMENT OF FISH CULTURE EXPENDITURE, 1926-1927

Hatcheries	Salaries	Maintenance	Total of Hatchery	Total of Provinces
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia</i> .....				29,869 84
Bedford.....	1,440 00	5,012 75	6,452 75	
Halifax Summer School.....		1,171 03	1,171 03	
Lindloff.....	273 00	738 53	1,011 53	
Margaree.....	4,140 00	4,034 12	8,174 12	
Margaree Pond.....	176 00	2,225 25	2,401 25	
Middleton.....	1,560 00	4,322 93	5,882 93	
Windsor.....	1,500 00	3,276 23	4,776 23	
<i>Prince Edward Island</i> .....				4,533 27
Kelly's Pond Hy.....	2,820 00	1,713 27	4,533 27	
<i>New Brunswick</i> .....				48,245 23
Grand Falls.....	2,940 00	3,000 05	5,940 05	
Miramichi.....	3,120 00	3,728 06	6,848 06	
Miramichi Pond.....		2,403 45	2,403 45	
Nepisiquit.....	588 90	846 44	1,435 34	
New Hatchery on St. John River.....		8 88	8 88	
New Mills Pond.....	727 26	3,436 94	4,164 20	
Restigouche.....	2,258 84	2,483 76	4,742 60	
Sparkle.....	627 91	130 73	758 64	
St. Andrews Summer School.....		371 08	371 08	
St. John.....	2,820 00	7,790 21	10,610 21	
St. John Pond.....		10,740 38	10,740 38	
Tobique.....		222 34	222 34	
<i>Ontario</i> .....				19,894 97
Collingwood.....	780 00	2,432 85	3,212 85	
Kenora.....	780 00	2,629 59	3,409 59	
Kingsville.....	1,140 00	951 82	2,091 82	
Port Arthur.....	735 00	782 13	1,517 13	
Sarnia.....	1,005 00	1,635 40	2,640 40	
Southampton.....	750 00	439 90	1,189 90	
Thurlow.....	1,500 00	1,381 43	2,881 43	
Warton.....	1,080 00	1,871 85	2,951 85	
<i>Manitoba</i> .....				19,924 81
Dauphin River.....		216 00	216 00	
Dauphin River Spawn Camp.....		1,274 76	1,274 76	
Gull Harbour.....	1,680 00	5,528 07	7,208 07	
Winnipegosis.....	1,960 00	9,265 98	11,225 98	
<i>Saskatchewan</i> .....				6,878 44
Qu'Appelle.....	2,940 00	3,938 44	6,878 44	
<i>Alberta</i> .....				8,345 03
Banff.....	3,075 00	3,821 87	6,896 87	
Spray Lakes.....		1,448 16	1,448 16	
<i>British Columbia</i> .....				108,987 77
General.....	7,543 71	3,203 11	10,746 82	
(Eagle River Counting Fence).....	153 00	1,699 42	1,852 42	
Anderson.....	2,182 91	4,533 45	6,716 36	
Babine.....	2,526 79	5,586 74	8,113 53	
Cowichan.....	3,389 75	3,858 55	7,248 30	
Cranbrook Eyeing Station.....	299 51	548 95	848 46	
Cultus.....	927 74	4,502 68	5,430 42	
Gerrard.....	90 00	1,527 75	1,617 75	
Harrison.....	321 94	143 42	465 36	
Kennedy.....	2,028 44	5,232 28	7,260 72	
Lloyds Creek Eyeing Station.....	412 50	1,445 73	1,858 23	
Nelson Eyeing Station.....	2,123 54	3,601 32	5,724 86	
Pemberton.....	5,145 44	6,881 95	12,027 39	
Pitt.....	1,211 62	4,663 75	5,875 37	
Rivers Inlet.....	2,522 55	9,960 71	12,483 26	
Skeena.....	3,034 78	12,595 38	15,630 16	
Stuart.....	1,440 00	3,648 36	5,088 36	
<i>General Account</i> .....	5,820 00	5,146 08	10,966 08	10,966 08
	83,591 13	174,054 31		257,645 44

## SUMMARY

Nova Scotia.....	9,089 00	20,780 84	29,869 84
Prince Edward Island.....	2,820 00	1,713 27	4,533 27
New Brunswick.....	13,082 91	35,162 32	48,245 23
Ontario.....	7,770 00	12,124 97	19,894 97
Manitoba.....	3,640 00	16,284 81	19,924 81
Saskatchewan.....	2,940 00	3,938 44	6,878 44
Alberta.....	3,075 00	5,270 03	8,345 03
British Columbia.....	35,354 22	73,633 55	108,987 77
General Account.....	5,820 00	5,146 08	10,966 08
	83,591 13	174,054 31	257,645 44

## FISHERIES EXPENDITURE, 1926-27—SUMMARY BY PROVINCES

Appropriation	General	Nova Scotia	Prince Edward	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Totals
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Salaries and disbursements.....	11,817 36	119,511 60	18,488 00	71,711 50	123 12		16,618 96	18,588 66	21,391 73	115,019 22	393,270 15
Fisheries Patrol.....		15,147 95	7,554 37	10,259 96			21,775 71			164,496 77	219,234 76
Fisheries Protection...	13,757 23	78,288 17	342 05	1,211 64						112,341 97	206,941 06
Fish Culture.....	10,966 08	29,869 84	4,533 27	48,245 23		19,894 97	19,924 81	6,878 44	8,345 03	108,987 77	257,045 44
Building Fishways, etc.	32 06	1,296 68		557 77			1 56	1 77		4,511 36	6,401 20
Conservation and development, etc.....											
Fisheries Intelligence Bureau.....	1,603 83	2,634 93	985 85							695 78	5,920 39
Inspection of canned and pickled fish....	327 39	22 00	75 93	114 00							539 32
International Halibut Commission.....	81 99	18,320 27		2,106 43	647 95					4,200 33	25,356 97
Legal and Incidental Expenses.....											
Marine Biological Bd.		190 00	105 00	206 79			58 55			335 35	895 69
Fishing Bounty.....	129,000 00	83,006 90	13,221 55	16,721 00	46,818 65						129,000 00
											159,768 10
	167,585 94	349,288 34	45,306 02	151,134 32	47,589 72	19,894 97	58,379 59	25,468 87	29,736 76	542,794 35	1,437,178 88
Civil Government Salaries.....											95,989 29
Contingencies.....											18,897 78
Gratuities.....											1,552,065 95
Sup. Fund, No. 5.....											260 00
											19 20
											1,552,345 15



## APPENDIX No. 6

List of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1926

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
Adeline.....	6	2	1	Sell fish.....	cwt. 20
Akutan.....	46	10	11	Sell fish, water.....	4,140
Alaska.....	57	15	7	Sell fish.....	2,400
Albatross.....	40	13	8	Sell fish, bait supplies.....	1,180
Aisance.....	11	5	1	Supplies.....	
Alice.....	21	3	2	Shelter.....	
Alice B.....	17	5	7	Supplies.....	
Alki.....	7	3	10	Sell fish.....	640
Aloha.....	19	6	8	Supplies.....	
Alsha.....	19	6	2	Bait.....	
Alten.....	43	15	11	Sell fish.....	4,540
America.....	25	11	4	Bait, supplies.....	
Anna J.....	22	6	8	Sell fish.....	940
Antler.....	22	5	9	Bait, supplies, sell fish.....	81
Arcade.....	14	4	7	Supplies.....	
Artic.....	29	7	4	Sell fish.....	1,120
Argo.....	26	6	4	Water, supplies.....	
Arrow.....	40	9	9	Sell fish.....	2,700
Atlantic.....	25	9	10	".....	2,900
Atlas.....	31	7	10	".....	3,080
Attie.....	37	10	9	".....	2,800
Augusta.....	19	5	8	".....	1,080
Ayohba.....	5	2	1	Supplies.....	
Baltic.....	20	5	3	Sell fish.....	420
Beaver.....	17	6	10	Supplies.....	
Bertha.....	11	3	5	Engine repairs, supplies.....	
Betty.....	15	5	7	Sell fish.....	740
Blanco.....	24	6	10	" , orders.....	680
Bonanza.....	30	6	6	".....	1,220
Bravo.....	14	3	4	".....	300
Brinvold.....	33	7	1	".....	360
Brisk.....	37	9	11	" , water.....	3,320
Brothers.....	13	5	10	".....	1,400
California.....	20	5	8	Orders, supplies, water.....	
Cape Clear.....	12	5	2	Sell fish.....	160
Carmen.....	19	9	2	".....	320
Carolén.....	18	5	3	".....	180
Castor.....	18	5	2	Supplies.....	
Cedric.....	19	6	6	Sell fish.....	1,480
Chancellor.....	14	5	6	Supplies, water.....	
Chelsea.....	51	10	10	Sell fish, supplies.....	2,920
Chimera.....	9	4	9	Shelter, bait, supplies.....	
Chum.....	6	3	1	Sell fish.....	60
Clara.....	6	2	1	Supplies.....	
Columbia.....	41	9	9	Sell fish.....	3,320
Commonwealth.....	60	17	3	".....	1,820
Condor.....	4	2	1	".....	140
Constitution.....	39	10	8	Sell fish, water.....	2,460
Corona.....	50	15	4	Supplies, sell, fish.....	240
Curlew.....	18	5	8	Bait, sell fish, supplies.....	54
Daily.....	26	6	4	Sell fish.....	1,260
Defence.....	20	5	2	".....	300
Democrat.....	27	6	8	" , supplies.....	1,360
Diana.....	22	6	9	Supplies, water.....	
Discovery.....	10	4	9	Engine trouble, sell fish, supplies.....	20
Dixland.....	7	2	1	Shelter.....	
Dora H.....	18	6	1	Supplies.....	
Eagle.....	67	15	16	Sell fish.....	4,720
Eastern Point.....	4	3	15	".....	740
Eidsvold.....	15	5	8	Supplies.....	
Eleanora.....	15	5	1	".....	
Ellen.....	5	2	1	".....	
Emblem.....	4	3	1	Sell fish.....	40
E. Neilson.....	15	4	5	".....	420
Enterprise.....	8	3	10	Bait, supplies.....	

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1926—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Eureka.....	11	3	13	Sell fish.....	1,100
Evolution.....	17	5	3	Supplies.....	
Explorer.....	34	9	2	Sell fish.....	560
Fairway.....	19	5	10	" , supplies.....	580
Faith.....	7	3	10	Supplies.....	
F. C. Hergert.....	21	5	5	Bait, supplies.....	
Far West.....	37	4	1	Supplies.....	
Flamingo.....	13	5	5	".....	
Flattery.....	10	3	3	Sell fish.....	200
Foremost.....	66	15	8	".....	3,820
Fortuna.....	21	5	9	Bait, shelter, supplies.....	
Forward.....	18	5	13	Sell fish, supplies.....	540
Fremont.....	10	4	6	Supplies.....	
Glacier.....	13	4	9	Sell fish.....	1,000
Gladstone.....	23	6	2	".....	320
Gladys.....	11	4	4	".....	320
Gony.....	12	5	6	Supplies, sell fish.....	140
Grant.....	43	9	9	Sell fish.....	2,460
Grayling.....	16	5	6	".....	800
Gretchen.....	7	4	15	Bait, shelter, supplies.....	
Harding.....	19	5	5	Supplies.....	
Harold.....	21	2	1	Shelter.....	
Hattie B.....	6	5	1	Supplies.....	
Happy.....	12	4	5	Sell fish.....	600
Havana.....	41	15	6	Supplies, sell fish.....	1,280
Hazel H.....	24	5	8	Sell fish.....	1,100
Helgeland.....	56	15	9	".....	3,680
Hi Gill.....	12	4	1	".....	80
Hilda.....	10	3	4	".....	360
Imperial.....	23	6	5	".....	640
Ithona.....	20	6	11	".....	2,260
Ivanhoe.....	27	6	7	".....	1,260
Jack.....	9	4	2	".....	320
Jennie F. Decker.....	16	5	3	Supplies.....	
J. P. Todd II.....	12	4	7	Sell fish.....	680
Joy W.....	7	2	1	Shelter.....	
June.....	15	5	4	Sell fish.....	440
K. 24.....	5	2	1	Supplies.....	
K. 95.....	5	2	1	".....	
K. 500.....	5	1	1	".....	
Kanaga.....	47	9	11	Sell fish.....	3,920
Kanatak.....	39	9	9	Supplies, sell fish.....	1,260
Katalla.....	16	5	5	Sell fish, supplies.....	40
Kate.....	3	2	1	Water.....	
Kodiak.....	38	15	10	Supplies, sell fish.....	1,540
L. 427.....	7	2	1	Engine trouble.....	
Lancing.....	16	5	4	Sell fish.....	640
La Paloma.....	14	11	9	Supplies.....	
Lenor.....	14	5	3	Sell fish.....	300
Leviathan.....	29	6	4	".....	760
Lewis.....	5	5	1	Supplies.....	
Libanon.....	14	5	6	".....	
Liberty.....	44	15	6	Sell fish, supplies.....	940
Lincoln.....	23	6	7	".....	1,220
Lituya.....	30	7	9	".....	1,960
Lois.....	15	7	1	Engine trouble.....	
Loma.....	28	7	1	Supplies.....	
Louise.....	16	8	13	".....	
Loveras.....	3	2	2	".....	
Lummen.....	10	3	3	Sell fish.....	340
M. 1023.....	5	2	1	Shelter.....	
Madeline J.....	25	6	6	Supplies, sell fish.....	80
Maggie.....	4	1	1	In distress.....	
Majestic.....	33	7	9	Sell fish.....	2,880
Mariner.....	21	5	9	Bait, supplies.....	
Marmot.....	30	9	8	Sell fish.....	2,420
Mars.....	9	4	3	".....	340
Mary.....	16	8	15	Bait, supplies.....	
Mermaid.....	19	5	9	Sell fish, supplies.....	100
Middleton.....	24	5	7	".....	1,020

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1926—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Mildred II.....	31	6	3	Sell fish.....	880
Mira.....	7	1	1	Water.....	
Myrtle.....	9	4	8	" , supplies.....	
National.....	20	6	9	Sell fish, supplies.....	820
Neptune.....	43	13	4	Supplies, sell fish.....	260
New England.....	70	19	2	Repairs, sell fish.....	1,100
Nomad.....	22	5	4	Supplies.....	
Nordenskjold.....	39	13	2	".....	
Nordic.....	30	7	7	Sell fish.....	1,480
North.....	9	3	16	Supplies, sell fish.....	1,440
Oceanus.....	26	6	10	".....	
Omaney.....	34	13	6	Sell fish.....	1,980
Omah.....	18	5	19	".....	1,840
Orient.....	48	14	6	" sickness.....	220
Osprey.....	16	5	1	Supplies.....	
Ouinalt.....	61	13	1	".....	
Pacific.....	17	3	1	Supplies.....	
Panama.....	35	13	7	" sell fish.....	1,340
Paragon.....	69	15	9	" ".....	3,720
Pearl.....	5	2	1	".....	
Pershing.....	18	5	9	".....	
Pioneer.....	48	9	6	Sell fish.....	1,980
Pioneer III.....	26	5	5	Supplies, bait.....	
Polaris.....	45	15	5	Sell fish.....	1,600
Portlock.....	36	9	5	".....	1,820
Premier.....	10	2	1	Defective clutch.....	
Presho.....	14	5	17	Supplies, shelter, bait.....	
President.....	24	6	7	Sell fish.....	1,780
Prosperity.....	25	6	6	".....	1,180
Radio.....	63	13	11	".....	4,960
Ranier.....	39	9	13	".....	4,000
Reliance I.....	19	5	3	".....	360
Reliance II.....	25	5	1	".....	100
Reliance.....	14	4	4	".....	480
Reliance.....	8	3	7	".....	450
Republic.....	51	15	6	" supplies.....	2,440
Resolute.....	47	10	11	".....	4,580
Restitution.....	24	6	6	Supplies.....	
Roald Amundsen.....	22	6	3	Sell fish.....	450
Rosario.....	16	5	2	Supplies.....	
Royal.....	15	5	10	Sell fish, supplies.....	20
Royal.....	2	1	2	".....	40
Roosevelt.....	13	5	6	Supplies.....	
Rutat.....	50	15	4	".....	
Sadie K.....	16	4	1	Sell fish.....	80
Saming.....	8	2	1	Shelter.....	
Scandia.....	79	17	9	Supplies, sell fish.....	2,040
Sea-Bird.....	5	2	1	".....	
Seasnort.....	4	2	1	".....	
Seattle.....	55	15	10	" sell fish.....	4,600
Selma J.....	9	4	2	".....	
Senator.....	11	7	6	Sell fish.....	1,820
Sentinel.....	21	6	8	".....	1,760
Seymour.....	44	13	6	Engine trouble, sell fish.....	1,000
Shelano.....	26	5	2	Supplies.....	
Sherman.....	10	5	8	Sell fish.....	1,340
Sirius.....	17	4	2	".....	240
Sitka.....	50	10	7	".....	2,380
Solano.....	52	11	2	Supplies.....	
Spray.....	20	6	8	" sell fish.....	1,200
Star.....	12	4	6	Sell fish.....	660
Summer.....	34	5	10	".....	3,700
Sunset.....	37	9	9	".....	3,040
Sun Wing.....	15	4	1	".....	120
Superior.....	26	6	3	".....	580
Superior.....	16	5	5	Supplies.....	
Susan.....	5	1	2	Shelter.....	
Swan.....	9	4	6	Supplies, shelter.....	
T 999.....	5	1	1	Supplies.....	
toosh.....	23	6	7	Sell fish.....	1,700



LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1926—*Concluded*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwt.
Teddy J.....	13	5	3	Sell fish.....	480
Tenyslar.....	13	2	1	Supplies.....	
Texas.....	16	5	8	".....	
Thelma II.....	26	5	5	Sell fish, supplies.....	140
Thor.....	25	10	6	".....	1,920
Tillicum.....	21	5	1	Shelter.....	
Todd.....	12	5	1	Supplies.....	
Trinity.....	41	9	9	Sell fish.....	3,480
Tordenskjold.....	39	13	3	Supplies.....	
Twilight.....	8	2	1	".....	
Tyee.....	13	4	5	Sell fish.....	560
Uncle Jim.....	6	2	1	Bait.....	
Unimak.....	22	5	10	" supplies, sell fish.....	60
Urania.....	27	6	3	Sell fish.....	800
Uranus.....	15	5	10	Supplies, sell fish.....	180
Valero.....	6	3	3	".....	
Valor.....	9	3	1	".....	
Valorous.....	21	6	11	Sell fish.....	1,820
Vansee.....	58	13	7	".....	2,940
Veleno.....	6	2	1	Supplies.....	
Velva.....	6	3	3	".....	
Venus.....	25	7	9	Sell fish.....	2,500
Venus.....	4	3	4	".....	260
Viking.....	20	5	1	Supplies.....	
Viking.....	11	4	8	".....	
Virginia.....	33	6	5	Sell fish.....	1,020
Virginus.....	5	2	1	Supplies.....	
Volunteer.....	20	7	4	".....	
Wabash.....	6	3	14	Sell fish.....	800
Wave.....	7	3	12	".....	640
Wesley.....	9	3	9	Supplies.....	
Western.....	41	9	9	Sell fish.....	3,180
Westjord.....	17	5	6	Supplies, sell fish.....	100
White Star.....	17	5	8	".....	
Wilson.....	22	6	5	" ".....	420
Wireless.....	19	5	7	" sickness.....	
Wizard.....	49	8	11	Sell fish.....	3,440
Woodrow.....	23	5	6	Supplies.....	
Wyach.....	2	2	1	Shelter.....	
Yakutat.....	41	12	5	Sell fish, orders.....	1,440
Yaquina.....	29	6	9	" supplies.....	120
Yellowstone.....	22	4	6	".....	800
Yukon.....	31	7	7	".....	1,980
Zenith.....	47	10	7	".....	2,620

## APPENDIX No. 7

The following is a statement of the different kinds of licenses issued by the different inspectors during the 1926-27 season:—

## MAGDALEN ISLANDS, QUEBEC—INSPECTOR S. T. GALLANT

Kind of Licenses—	Number of Licenses Issued
Lobster fishing licenses.....	504
Lobster packing licenses.....	15
Lobster packing extensions—24.	
Certificates under section 63—3.	
Herring seine licenses.....	24
Herring trap-net licenses.....	25 (1 cod trap-net)
Lobster pound licenses.....	1
	<hr/> 569

## PRINCE EDWARD ISLAND—INSPECTOR S. T. GALLANT

Lobster fishing licenses.....	2,200 (2 cancelled)
Lobster packing licenses.....	137
Lobster packing extensions—72.	
Oyster fishery licenses.....	147
Quahaug fishery licenses.....	4
Fish cannery licenses.....	11
Certificates under section 63—6.	
Reduction works licenses.....	Nil
Trap-net fishing licenses.....	3
Smelt gill-net licenses.....	355
Smelt bag-net licenses.....	233
	<hr/> 3,090 (2 cancelled)

## NOVA SCOTIA—DISTRICT No. 1—INSPECTOR A. G. McLEOD

Lobster fishing licenses.....	1,830
Lobster packing licenses.....	47
Lobster packing extensions—52.	
Oyster fishery licenses.....	77
Fish cannery licenses.....	6
Certificates under section 63—63.	
Reduction works licenses.....	1
Herring weir licenses.....	Nil
Trap-net fishing licenses.....	43
Salmon gill-net or drift-net licenses.....	24
Salmon trap-net, pound-net or weir licenses.....	162
Special angling permits.....	57
Smelt gill-net licenses.....	210
Smelt bag-net licenses.....	32
Lobster pound licenses.....	Nil
	<hr/> 2,489

## NOVA SCOTIA—DISTRICT No. 2—INSPECTOR D. H. SUTHERLAND

Lobster fishing licenses.....	2,819 (2 cancelled)
Lobster packing licenses.....	57 (1 cancelled)
Lobster packing extensions—69.	
Oyster fishery licenses.....	112
Quahaug fishery licenses.....	1
Shad gill-net or drift-net licenses.....	22
Fish cannery licenses.....	3
Certificates under section 63—94.	
Reduction works licenses.....	2
Seine licenses.....	157 (1 cancelled)
Herring weir licenses.....	11
Trap-net fishing licenses.....	117
Salmon gill-net or drift-net licenses.....	348 (1 cancelled)
Salmon trap-net, pound-net or weir licenses.....	144
Special angling permits.....	56
Smelt gill-net licenses.....	217
Smelt bag-net licenses.....	228
Scallop fishery licenses.....	Nil
Lobster pound licenses.....	3
Lobster pound certificates—81.	

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4,297 (5 cancelled)

## NOVA SCOTIA—DISTRICT No. 3—INSPECTOR H. H. MARSHALL

Kind of Licenses— <i>Continued</i>	Number of Licenses Issued
Lobster fishing licenses.....	3,110 (1 cancelled)
Lobster packing licenses.....	31
Lobster packing extensions—16.	
Shad gill-net or drift-net licenses.....	3
Fish cannery licenses.....	15
Certificates under section 63—176 (1 cancelled and 1 spoiled).	
Reduction works licenses.....	Nil
Herring weir licenses.....	73 (1 cancelled)
Trap-net fishing licenses.....	140
Salmon gill-net or drift-net licenses.....	225
Salmon trap-net, pound-net or weir licenses.....	61
Salmon net permits.....	32
Special angling permits.....	549 (3 cancelled)
Smelt gill-net licenses.....	85
Smelt bag-net licenses.....	24
Scallop fishery licenses.....	326
Lobster pound licenses.....	11
Lobster pound certificates—243.	
	<hr/> 4,685 (5 cancelled)

## NEW BRUNSWICK—DISTRICT No. 3—INSPECTOR H. E. HARRISON

Shad gill-net or drift-net licenses.....	212
Sturgeon fishery licenses.....	11
Whitefish fishery licenses.....	Nil
Salmon net permits.....	169
Salmon gill-net or drift-net licenses.....	124
Smelt gill-net licenses.....	1
Smelt bag-net licenses.....	Nil
Bass fishery licenses.....	85
	<hr/> 602

## NEW BRUNSWICK—DISTRICT No. 1—INSPECTOR J. F. CALDER

Lobster fishing licenses.....	544
Shad gill-net or drift-net licenses.....	46
Fish cannery licenses.....	7
Certificates under section 63—4.	
Reduction works licenses.....	1
Herring weir licenses.....	581
Clam permits.....	56
Salmon gill-net or drift-net licenses.....	82
Herring seine licenses.....	1
Smelt gill-net licenses.....	Nil
Smelt bag-net licenses.....	Nil
Scallop fishery licenses.....	3
Lobster pound licenses.....	3
Lobster pound certificates—71.	
Lease of dark harbour fishing privileges—1.	
	<hr/> 1,324

## NEW BRUNSWICK—DISTRICT No. 2—INSPECTOR A. L. BARRY

Lobster fishing licenses.....	1,973
Lobster packing licenses.....	130
Lobster packing extensions—48.	
Oyster fishery licenses.....	492
Quahaug fishery licenses.....	57
Shad gill-net or drift-net licenses.....	13
Fish cannery licenses.....	6
Certificates under section 63—205 (1 cancelled).	
Reduction works licenses.....	Nil
Herring weir licenses.....	Nil
Gaspereau pound-net or trap-net licenses.....	46
Salmon gill-net or drift-net licenses.....	53
Salmon trap-net, pound-net or weir licenses.....	491
Smelt gill-net licenses.....	128
Smelt bag-net licenses.....	5,303
Scallop fishery licenses.....	9
Lobster pound licenses.....	6 (1 cancelled)
Bass fishery licenses.....	48
Lobster pound certificates—247.	
	<hr/> 8,755 (1 cancelled)



## MARINE AND FISHERIES

## MANITOBA—INSPECTOR J. B. SKAPTASON

Kind of Licenses— <i>Continued</i>	Number of Licenses Issued
Commercial sturgeon fishery licenses.....	184
Domestic sturgeon fishery licenses.....	98
Special angling permits (non-resident).....	196
Receipt books—79.	
Pound-net licenses .....	16
Special fishery licenses.....	3,465
Settler's permits .....	1,349
	<hr/> 5,308

## SASKATCHEWAN—INSPECTOR G. C. MACDONALD

Commercial sturgeon fishery licenses.....	2
Domestic sturgeon fishery licenses.....	Nil
Special angling permits.....	286
Receipt books—2.	
Commercial and fisherman's fishery licenses.....	828 (5 cancelled)
Domestic fishery licenses.....	129 (2 cancelled)
Indian and half-breed permits.....	841 (1 cancelled and 5 destroyed)
	<hr/> 2,086 (8 cancelled and 5 destroyed)

## ALBERTA—INSPECTOR R. T. RODD

Indian and half-breed permits.....	903
Commercial and fisherman's licenses.....	1,589 (8 cancelled)
Receipt books—973 (3 cancelled).	
Fish cannery licenses.....	Nil
Special angling permits.....	5,669 (5 cancelled)
Domestic fishery licenses.....	180 (5 cancelled)
	<hr/> 8,341 (18 cancelled)

## BRITISH COLUMBIA—INSPECTOR J. A. MOTHERWELL

Fish cannery licenses.....	8
Reduction works licenses.....	23
Special angling permits.....	36
Indian permits .....	267
Metal tags—267.	
Crab fishery licenses.....	133
Smelt or sardine fishery licenses.....	73
Sturgeon fishery licenses.....	Nil
Miscellaneous licenses .....	137
Salmon fishery licenses.....	4,417 (4 cancelled)
Salmon trolling licenses.....	2,382 (1 cancelled)
Salmon trap-net licenses.....	14
Salmon purse-seine licenses.....	407 (1 cancelled)
Salmon drag-seine licenses.....	41
License to Captain of salmon (purse or drag) seine boat.....	277
Salmon curing licenses.....	61 (2 cancelled)
Salmon cannery licenses.....	79
Boat license to buy fresh salmon from fishermen.....	266
License to a person engaged in cold storage or fish packing to buy fresh salmon from fishermen.....	61
Grayfish fishery licenses.....	177
Licenses to assistant operator of salmon (purse or drag) seine used under license number.....	1,556
License to assistant in a boat used in operating a salmon gill- net or drift-net .....	1,035
Cod fishery licenses.....	400
Herring or pilchard gill-net or drift-net licenses.....	32
Herring or pilchard drag-seine licenses.....	Nil
Herring or pilchard purse-seine licenses .....	64 (1 cancelled)
License to Captain of a herring or pilchard seine boat .....	60
Herring or pilchard curing licenses.....	30
Whale factory licenses.....	2
Counterfoil of pelagic sealing certificates—16.	
	<hr/> 12,038 (9 cancelled)

## YUKON

Special fishery licenses.....	28
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## PACIFIC COAST

Licenses to United States fishing vessels.....	200
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Total .....	53,812 (48 cancelled and 5 destroyed)
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DOMINION OF CANADA

SIXTY-FIRST  
ANNUAL REPORT  
OF THE  
FISHERIES BRANCH

Department of Marine and Fisheries

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FOR THE YEAR

1927-28



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1928





*To His Excellency the Right Honourable Viscount Willingdon, G.C.S.I.,  
G.C.M.G., G.C.I.E., G.B.E., Governor General and Commander in Chief  
of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of your Excellency and the Parliament of Canada, the Sixty-first Annual Report of the Fisheries Branch of the Department of Marine and Fisheries.

I have the honour to be,

Your Excellency's most obedient servant,

P. J. ARTHUR CARDIN,  
*Minister of Marine and Fisheries.*

DEPARTMENT OF MARINE AND FISHERIES,  
Ottawa, July, 1928.

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## DEPUTY MINISTER'S REPORT

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To the Hon. P. J. A. CARDIN,  
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the Sixty-first Annual Report of the Fisheries Branch of the Department, which is for the fiscal year ended March 31, 1928.

The report deals with the following subjects:—

- Review of the Fisheries of 1927.
- Operation of the Fish Inspection Act.
- The Inspection of Canneries and Canned Fish.
- Imperial Economic Committee's Report on Marketing Canadian Fish.
- Fisheries Intelligence Service.
- Fishing Bounty.
- Fish Culture.
- North American Committee on Fisheries Investigation.
- International Fisheries Commission.
- Marine Biological Board.
- Prosecutions.
- Oyster and Scallop Investigations.

Appendices to the report include the following:—

- Report of Inspectors of Fisheries.
- Report on Activities of Marine Biological Board.
- Report on Oyster and Scallop Investigations.
- Report of Fisheries Engineer on Fishways, etc.
- Fisheries Expenditure and Revenue.
- Entries of United States Fishing Vessels.
- Summary of Licenses Issued.
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- Expenditure and Revenue by provinces, 1867-1927.
- Report of Mr. J. J. Cowie and Mr. G. R. Earl on their work with Imperial Economic Committee.
- Report on the Fisheries of the McKenzie River Delta.

### REVIEW OF THE FISHERIES OF 1927

During the year under review the quantity of fish landed, both sea and inland, was much less than in 1926, and the marketed value was considerably lower. The marketed value for the whole of Canada was \$49,497,038, while for 1926 it was \$56,360,633.



The following table shows the marketed value by provinces for the whole of Canada, as compared with the two preceding years:—

	1927	1926	1925
	\$	\$	\$
Nova Scotia.....	10,783,631	12,505,922	10,213,779
New Brunswick.....	4,406,673	5,325,478	4,798,589
Prince Edward Island.....	1,367,807	1,358,934	1,598,119
Quebec.....	2,736,450	3,110,964	3,044,919
Ontario.....	3,670,229	3,152,193	3,436,412
Manitoba.....	2,039,738	2,328,803	1,466,939
Saskatchewan.....	503,609	444,288	494,882
Alberta.....	712,469	749,076	453,504
British Columbia.....	23,264,342	27,367,109	22,414,618
Yukon Territory.....	12,090	17,866	15,370
Total.....	49,497,038	56,360,633	47,942,131

The province of Nova Scotia shows a decrease in value of a million and half dollars from the 1926 value but is a half million dollars ahead of that for 1925. Unfavourable weather conditions during 1927 were responsible for a large part of the decreased catch in this province, together with an over-production in the months of November and December of 1926, when unusually mild and favourable weather conditions aided the fishermen in landing large quantities of fish. The catch of cod and haddock was much lower and gave a decrease in value of \$1,200,000 and \$270,000 respectively.

In the province of New Brunswick, where the drop in value was nearly a million dollars, there were smaller catches of cod, pollock, herring, and lobsters. Notwithstanding a larger quantity of sardines landed, the value was less by some \$170,000.

The value of the fisheries of Prince Edward Island shows a slight increase over that of the previous year, due to higher prices obtained for certain kinds of fish, although the catches in most instances were about the same or slightly lower than in 1926.

In the province of Quebec, sea fisheries district, there were decreases in the catch of cod, herring, and lobsters, three of the chief kinds taken. The catch of salmon was slightly less, while a large increase in the catch of mackerel is recorded.

The increase in the value for Ontario was due to larger catches of herring, trout, and tullibee. Although the catch of whitefish was slightly less than in 1926, a higher value was obtained.

Notwithstanding that the quantity of some of the principal kinds of fish landed was greater, the value shows a decrease. This was owing to poor markets and low prices received especially for pickerel and tullibee, which constitutes a large part of the total production.

The catch of whitefish in Saskatchewan shows an increase, with an increase of over \$60,000 in value. There was also an increased catch of pickerel.

In Alberta there was a large decrease in the catch and value of pickerel, an increase in the catch of pike but a drop in value, more than double the catch of trout, and a slight decrease in the catch of whitefish.

The province of Saskatchewan is the only one of the three Prairie Provinces to show an increased value. This was due to increased catches of pickerel and whitefish. In the province of Manitoba there were larger quantities of pickerel

and tullibee landed but, owing to lower prices, there was a drop in the marketed value of each. Fewer whitefish were taken. In the province of Alberta the total value is less despite the fact that some kinds of fish show large increases in the catch. Trout shows an increase from 3,907 cwt. to 10,882 cwt. with a corresponding increase in value, while tullibee also shows an increase in catch and value. The catch of pike was considerably larger but the value somewhat less.

The province of British Columbia shows a considerable decrease. A big drop in the catch of salmon and a smaller catch of halibut were mainly responsible for the decrease. A much larger quantity of herring and pilchards were taken than in 1926.

#### ATLANTIC COAST

*Cod, Haddock, Hake, and Pollock.*—The total quantities of these kinds of fish landed were 2,612,743 cwt., as compared with 3,429,024 cwt. in 1926. In each of the kinds of fish, in each of the provinces, with one or two exceptions, were decreased catches reported. The greatest falling off was in the catch of cod in Nova Scotia, which dropped from 1,858,944 cwt. in 1926 to 1,331,873 cwt. in 1927. The decrease in the catch of pollock in New Brunswick is quite noticeable, the figures for the year under review and the previous one being 7,693 cwt. and 38,271 cwt. respectively. Hake shows an increased catch in Nova Scotia of 27,000 cwt., there being 119,431 cwt. landed. Of the total of these kinds of fish landed, there were sold fresh and fresh fillets 334,175 cwt., or a decrease of 105,106 cwt. There were produced smoked and smoked fillets 111,431 cwt., compared with 151,357 cwt. in 1926.

The catch of the Lunenburg fleet was 227,590 quintals, or 115,140 quintals less. During the gale of August 24 this fleet suffered the loss of four vessels and their entire crews. The total number of vessels engaged in fishing during 1927 was 83, or 9 fewer than fished in 1926. The prices received for the dried product, while slightly better than in the previous year, were still quite low.

There were fourteen steam-trawlers operating out of Nova Scotia: seven from Canso and seven from Halifax. This number was an increase of two.

*Mackerel, Herring, and Sardines.*—Some 1,270,158 cwt. of these fish were landed. In the previous year 1,531,399 cwt. were landed, or a decrease of 261,241 cwt. during 1927. In Nova Scotia there were 50,000 cwt. less herrings taken, while the catch of mackerel was greater by nearly 5,000 cwt. Some 10,000 cwt. less of herring, only half the quantity of mackerel, and 6,000 cwt. more sardines were taken in New Brunswick. The demand for sardines after the American canners commenced buying was good but the run of sardines somewhat light. In Prince Edward Island the catch of herring shows a decrease of some 12,000 cwt., but owing to better prices the marketed value was only slightly less. The catch of mackerel was slightly more. The catch of herring was much lower in Quebec, while, on the other hand, a large increase of 48,000 cwt. of mackerel is noted.

*Other Sea Fish.*—The catch of halibut was greater by over 3,500 cwt. A decrease of over 5,700 cwt. is noted in the quantity of swordfish taken. The catch of tomcod was 22,744 cwt. and of flounders 9,383 cwt. This is an increase in the former and a decrease in the latter.

*Shellfish.*—The catch of lobsters was 316,831 cwt., which is a decrease of 12,751 cwt. from the 1926 catch and 24,007 cwt. less than the 1925 catch. The

catch by provinces and its disposal is given in the following table, together with a comparison for the year 1926:—

—	Catch	*Marketed shell	Canned
	cwt.	cwt.	cases
1927			
Nova Scotia.....	179,673	68,021	55,771
New Brunswick.....	49,752	16,162	18,866
Prince Edward Island.....	62,800	2,097	27,896
Quebec.....	24,606	1,197	11,404
Total.....	316,831	87,477	113,937
1926			
Nova Scotia.....	184,316	71,688	56,277
New Brunswick.....	59,611	15,861	24,041
Prince Edward Island.....	66,298	3,153	29,442
Quebec.....	29,358	847	13,759
Total.....	339,583	91,549	123,519

\*Including lobster meat.

There were 19,462 barrels of oysters taken, which was slightly less than in 1926. Some 43,293 barrels of clams were dug, or an increase of over 1,500 barrels. The quantity of scallops taken shows a large increase, 38,635 barrels being landed, compared with 23,200 barrels during 1926. None of these shellfish were landed in New Brunswick during the year, the quantity landed in Quebec was only one-third of that landed in 1926, while the landings in Nova Scotia were just about double.

*River Spawning Fish.*—The quantity of salmon landed was 49,113 cwt., or 3,682 cwt. less than in the previous year. A decreased catch was recorded for each of the Atlantic provinces. There was a decrease of 17,962 cwt. in the catch of smelts, only 72,519 cwt. being landed.

Some 54,115 cwt. of alewives were landed in New Brunswick and Nova Scotia, or a decrease of over 17,000 cwt. This fishery depends chiefly on the market for the salted. As the market was bad during the year, little interest was taken by the fishermen in this branch of the industry.

#### INLAND FISHERIES

The catch of whitefish was 185,664 cwt., compared with 190,644 cwt. in 1926. The province of Ontario, where the largest catch of this species is made, recorded a catch of some 61,658 cwt., or a drop of 2,391 cwt. Manitoba came second with 49,114 cwt. landed, a drop of 5,008 cwt. Saskatchewan was third with 41,323 cwt. landed, an increase of 3,656 cwt.

There were 140,019 cwt. of pickerel landed, or an increase of 13,933 cwt. Of the total, Manitoba contributed 99,813 cwt. which was an increase of 12,562 cwt.

The province of Ontario shows a catch of 31,173 cwt. of blue pickerel, a slight increase over the catch of the same kind in 1926.

The catch of pike was 70,473 cwt., which was a decrease of over 2,000 cwt. from the previous year. The province of Manitoba contributed some 40,166 cwt. to the total catch.

Some 58,099 cwt. of fresh water herring or ciscoes were taken in the province of Ontario from the Great Lakes area. This was an increase of over 14,000 cwt. as compared with 1926.



## PACIFIC COAST

The marketed value of the fisheries of the Pacific coast shows a decrease of \$4,139,205. This is accounted for by much smaller catches of salmon and halibut. There were increased catches of herring and pilchards.

*Salmon.*—The catch of salmon was 1,490,395 cwt., a decrease of 536,160 cwt. The pack was much less, 1,361,977 cases compared with 2,065,190 in 1926. Much of the decrease was due to extension of the close season and other measures for the protection of the salmon. The catch of sockeye while below the average was considered fairly satisfactory. During the fall there was a large run of late sockeye salmon in the Fraser river similar to that which occurred in 1926. The catch of pinks shows a big decrease. Owing to intensive fishing for this species it was deemed necessary to take extra precautions such as extension of the weekly close season and early closing of the season, etc., to ensure sufficient numbers reaching the spawning areas. An average catch of cohoes was made while the catch of chums was somewhat less.

*Halibut.*—The catch of halibut decreased by 14,563 cwt. to 300,532 cwt. It does not appear that the close season now in force has materially affected the catch and it would therefore seem that an extension of close season must be considered or some alternative if the halibut is not to be depleted.

*Herring.*—The catch was 1,724,246 cwt., compared with 1,301,269 cwt. in 1926. Of the catch over one million hundredweights of dry salted herring were produced for sale in the Orient. In the reduction works there were 170,450 gallons of herring oil and 1,838 tons of herring meal produced.

*Pilchards.*—Some 1,368,582 cwt. of these fish were landed, which was nearly fifty per cent more than in the preceding year. Pilchards are canned to a small extent, over 58,000 cases being put up which was more than double the pack of the previous year. The greatest use for these fish, however, is in the manufacture of meal and oil of which 2,673,876 gallons of the former and 12,169 tons of the latter were produced. The number of reduction establishments producing meal and oil from pilchards, herring and whales, was twenty-two and the value of their products (including the products of the whale factories) was \$2,289,952, or nearly double that for 1926.

*Whales and Seals.*—Two whaling stations were in operation during the year. The number of whales taken was 258 and the value of the products \$241,488. This was a decrease from 1926.

There were 1,476 fur seals taken by Indians under the Pelagic Sealing Treaty, compared with 2,824 in the preceding year.

## INSPECTION OF FISH

Inspection of certain kinds of cured fish was carried on as usual under the provisions of the Fish Inspection Act. The Act requires packers to have containers, as well as fish, in accordance with the standards laid down in the regulations, and empowers inspectors to examine such whenever and wherever it is necessary and convenient.

During the year there were inspected on the Atlantic coast 38,058 packages of various kinds containing salted herring, mackerel, alewives and salmon. There were also inspected 33,598 boxes of smoked herring. Further, there were inspected 61,400 empty barrels before they passed into the hands of the packers.

On the Pacific coast there were inspected 243,732 boxes of dry salted herring, each containing 400 pounds, before being exported to the Orient.

## STANDARDS OF SIZE AND QUALITY FOR SALTED COD, ETC.

In the course of the year the department, after consultation with the trade, established by law standards of size and quality for dry and salted cod, haddock, hake, cusk and pollock.

This was done as a result of representations to the effect that there were no well defined standards on which sellers and buyers of these fish could base just and reasonable prices. The same price is usually paid for fish that are not well cured as for fish that are well cured; consequently fishermen who cure their own fish have no incentive to improve the quality of their cure.

The standards thus established have been incorporated in the regulations to the Fish Inspection Act. The department's inspectors of fish curing and packing have been empowered to carry out such inspections as may be required. Inspection is not compulsory. The purpose simply is, for the present, to provide a means of guarding alike the interests of the fisherman and the dealer, when the former agrees to sell and the latter to buy dry or green salted fish in accordance with the established standards, at a price conditional upon the fish at the time of delivery being such as the standards require. Both seller and buyer in that event have an opportunity of requesting the nearest fish inspection officer to inspect the fish in question and decide as to whether they are up to the standard agreed upon.

## INSPECTION OF CANNERIES AND CANNED FISH

The department's officers carried on the inspection of fish canneries of all kinds, the raw material to be used, the finished product and the labelling and marking of the cans during the year, as previously.

There were in operation on the Atlantic coast 438 lobster canneries, 15 clam canneries, and 10 other fish canneries, in which were canned sardines, salmon, haddock, cod, and mackerel.

On the Pacific coast there were operated 77 salmon canneries, in some of which clams and pilchards were also canned.

Through the efforts of the inspecting officers there is from year to year more and more attention being given by canners to maintaining sanitary canning places, ensuring a high-class product, and generally complying with the various requirements of the Meat and Canned Foods Act, and the regulations.

## IMPERIAL ECONOMIC COMMITTEE ON MARKETING CANADIAN FISH

The Imperial Economic Committee appointed by the Governments of the United Kingdom, the Dominions, India, and the Colonies and Protectorates, and acting under its terms of reference from the last Imperial Conference, has completed a comprehensive inquiry into the methods of marketing and preparing for market in Great Britain fish foods produced within the Empire.

Canada was represented on the committee by Mr. J. J. Cowie, of the Department of Marine and Fisheries, and Mr. G. R. Earl, of Yarmouth, N.S., was associated with him as expert advisor from Nova Scotia.

The following is from the committee's report:—

The committee confined its attention to those sea fisheries the products of which largely enter into the food of the people of Great Britain. A number of witnesses representing both producing and marketing interests were examined, while the committee had the advantage of consultation with experienced officials of the home and overseas Governments and of eminent scientists.

Great Britain does not depend solely for its fish supply on catches by British fishermen. There are three sources of supply,—

- (1) landings by British fishing vessels,
- (2) landings from foreign vessels arriving direct from the fishing grounds, and
- (3) shipments as cargo from Empire and foreign ports.



The landings of herring and mackerel are usually more than equal to the home demand. On the other hand the British landings of cod, haddock, and such like fish referred to in the report as whitefish, are not always sufficient for the British demands.

Since the war the total quantity of whitefish sold per year in Great Britain has increased by 500,000 cwt. At the same time the British landings have decreased by 750,000 cwt., while imports, mostly foreign, have increased by 1,300,000 cwt. The British industry complains of this increased foreign competition.

The report goes on to say that if retail fish prices were in closer harmony with those of other foodstuffs and were whitefish ample and regular in supply and excellent in quality the demand would increase enormously. With a 10 per cent increase in the per capita consumption and a displacement of even one-half of the foreign imports there would be required British landings much in excess of any yet attained, while an unsatisfied demand to be met from other Empire sources would remain.

It is pointed out in the report that the Canadian representatives disclaim any desire to further embarrass or damage the British industry, but rather, in so far as it is possible, to supplant foreign importations and to share in the future growth of the market.

The opinion is fairly general that the North sea is being overfished and for some year British trawlers have been turning increasingly to more distant waters, consequently much of the fish that is landed is not in the best condition.

It is the opinion that stability in wholesale prices is the key to reduction in retail prices and in increased consumption. Under existing conditions, fresh fish must be marketed immediately after landing; this causes alternate gluts and shortages. If supplies could be stored even for a few days without deterioration the trade conditions would be revolutionized.

The Canadian shipper of fresh fish meantime cannot possibly foretell the price in the British wholesale market. It is useless for him to send large and irregular supplies and market them quickly in the manner customary in the British industry—i.e., in ice; the result would be to break the market to the detriment of himself and the British trade. He, too, needs regularity and stability, and this can only be attained by sending the best quality suitably preserved, and marketing them gradually.

The committee by this does not intend to convey the impression that prime fresh fish boxed in ice and shipped in refrigerated chambers from Canada cannot be landed in the British markets in good condition, but it does warn the trade against the hazard involved in that method of shipment.

It is noted that development in sea fishing for whitefish in Great Britain has taken the form of increased use of the steam trawler, whereas in Canada fishing by hook and line is most favoured. It is further noted that fish taken by line is less liable to injury than that taken by steam trawler, and as many of the line vessels and boats land their fish on the day of catching it is brought to shore in prime condition.

The committee's conclusions and recommendations, in so far as they concern Canada, may be summarized as follows:—

1. The demand in Great Britain is chiefly for fresh fish.
2. The consumption of whitefish has increased while that of herring has decreased.
3. Except for the requirements of a small export trade in salted cod, all the whitefish landed in Great Britain is consumed there. The demand is expanding, and with lower prices, better average quality, and more regular supplies is likely to expand further.
4. The increased demand has been met so far by increased foreign imports.
5. British vessels have found it necessary to fish on more distant grounds. The fish from these grounds is of variable quality when landed, according to the length of time after capture, as present methods of preservation are inefficient.



6. Better methods of preservation are required for fish, both before and after landing, to avoid wide fluctuations in price due to gluts or scarcity.

7. The present excessive fluctuations in price greatly increase the commercial risks of shipping fresh fish in ice from Canada and tend to discourage that branch of interimperial trade.

8. Believing that the prime essential for all improvement of organization lies in the study and application of better methods of preservation at an economic cost, the committee's principal recommendation is that research be instituted for the purpose of improving methods of preserving fish from the time it has been caught until it reaches the consumer.

9. This research should be based on a central station at a fishing port in Great Britain and a station in the Maritime Provinces of Canada.

10. The Governments of Great Britain and Canada should encourage co-operation and co-relation between the two stations in order to cheapen costs and secure more rapid results.

The report notes that the Canadian Government, recognizing that the development of an export trade in fish in prime condition depends on a satisfactory solution of the problem of preservation, has already established such a station at Halifax, Nova Scotia, where the methods of brine freezing fish are being tested and demonstrated. Some work of this nature has also been done in Great Britain at the Low Temperature Research Institute at Cambridge, but that institute suffers from the disadvantage of having an inland location.

11. Recent discoveries have drawn attention to the special value of cod liver oil as a source of vitamins, not only for medicinal purposes but for strengthening other foods deficient in this substance, and investigation is recommended into the causes of variation in the vitamin content of the oil and the methods of refining it so that the full vitamin content may be retained and the market objections to taste and odour eliminated.

12. It is necessary for the economic development of the industry to exploit to the fullest extent the by-products. Whitefish meal has special value for feeding animals and poultry. While there is a large market in Germany for fish meal, certain of the meat trades in Great Britain have opposed its use on the ground of its inducing taint. Repeated experiments at research stations, however, have demonstrated that there is no risk of taint, if the meal is used in the proportions and in the methods advocated by the English Ministry of Agriculture and Fisheries. The opening of an extended use of fish meal in Great Britain is very great and its development would benefit both the live stock industry and the fishing industry.

The committee believes a greater development of a trade from the fishing ports in fillets instead of whole fish is the line clearly indicated by economy, which would result in a greater beneficial use of by-products.

With respect to salted and dried fish, the report states there is a market for cured or salted cod in the British West African Colonies which, if studied and suited, will probably increase. It is mainly supplied by Norway meantime.

With respect to canned salmon, the committee states that in its report on meat issued two years ago, it pointed out that the compulsory marking of the country of origin on the cans would enable the British consumer to select Empire canned salmon in preference to foreign goods. As a result the British Merchandise Marks Act was amended in 1926 to give effect to this, and it is understood that the British Columbia producers are for the present watching its operation and the matter is left there, except to say that a high standard of quality must be maintained.

Besides taking part in the formal inquiries of the committee and assisting in drafting the report, the Canadian representatives made extended informal personal investigations amongst the trade in Great Britain and a report of their findings will shortly be made public.

## FISHERIES INTELLIGENCE SERVICE

Under this service there was carried on during the season of 1927:—

1. The collection of monthly statistics of the sea fisheries, and the compilation of such in a summarized form for publication through the press each month.

2. The publication of quarterly bulletin containing the statistics in detail. The bulletin is distributed to the trade and all directly concerned. The statistics are practically all collected by the regular fishery officers while performing their other duties as such and at very little additional cost.

3. The collection of information concerning supplies of bait day by day along certain stretches of the coast during the spring and summer months. The information is gathered by the officers of the department, who send it by telegram daily to certain ports where it is posted up for information of masters of fishing vessels and those looking for bait.

## FISHING BOUNTY

Under the authority of "An Act to Encourage the Development of the Sea Fisheries and the Building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the Governor in Council. It is distributed under the name of fishing bounty, by the Department of Marine and Fisheries amongst fishermen, and fishing vessel and boat owners on the Atlantic coast under regulations made from time to time by the Governor in Council.

For the year 1927, payment was made on the following basis:—

To owners of vessels entitled to receive bounty, \$1 per registered ton, payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty, \$8 each.

To owners of boats measuring not less than 12 feet keel, \$1 per boat.

To boat fishermen entitled to receive bounty, \$6.60 each.

There were 9,609 bounty claims paid. In the preceding year there were 11,036 bounty claims paid.

The total amount paid was \$158,375.80 allocated as follows:—

To 543 vessels and their crew.....	\$ 44,462 50
To 9,066 boats and their crew.....	\$113,913 30

## FISHING BOUNTY EXPENDITURE FOR 1927-28

County	Boats	Men	Amount	Vessels	Tons	Avg. Tons	Men	Amount	Total Amount
<i>Nova Scotia</i>			\$ cts.					\$ cts.	
Annapolis.....	141	225	1,626 00	1	15	15	5	55 00	1,681 00
Antigonish.....	130	171	1,254 60						1,254 60
Cape Breton.....	298	542	3,874 20	27	430	16	108	1,294 00	5,168 20
Cumberland.....	2	3	21 80						21 80
Digby.....	314	518	3,729 80						3,729 80
Guysboro.....	535	852	6,158 20	23	382	17	114	1,294 00	7,452 20
Halifax.....	855	1,117	8,225 20	68	1,036	15	284	3,308 00	11,533 20
Inverness.....	223	463	3,195 80	4	47	11	19	199 00	3,394 80
Kings.....	37	53	386 80						386 80
Lunenburg.....	426	513	3,810 80	136	7,454	55	1,881	22,501 50	26,312 30
Pictou.....	13	19	138 40						138 40
Queens.....	138	244	1,748 40	14	220	15	72	796 00	2,544 40
Richmond.....	336	583	4,180 80	13	182	14	41	505 00	4,685 80
Shelburne.....	444	819	5,848 40	20	553	28	163	1,857 00	7,705 40
Victoria.....	218	328	2,401 00	8	115	14	35	393 50	2,794 50
Yarmouth.....	122	273	1,923 80	8	428	53	119	1,380 00	3,303 80
Total.....	4,232	6,723	48,524 00	322	10,862	34	2,841	33,583 00	82,107 00

FISHING BOUNTY EXPENDITURE FOR 1927-28—*Concluded*

County	Boats	Men	Amount	Vessels	Tons	Avg. Tons	Men	Amount	Total Amount
<i>New Brunswick</i>			\$ cts.					\$ cts.	\$ cts.
Charlotte.....	233	397	2,849 20	1	12	12	2	27 00	2,876 20
Gloucester.....	312	767	5,366 20	198	3,256	16	853	10,079 00	15,445 20
Kent.....	82	144	1,031 40	4	42	10	9	114 00	1,145 40
Northumberland.....		1	5 60	5	51	10	13	153 00	158 60
Restigouche.....	5	8	57 80	1	10	10	3	34 00	91 80
St. John.....	18	26	189 60						189 60
Total.....	650	1,343	9,499 80	209	3,371	16	880	10,407 00	19,906 80
<i>Prince Edward Island</i>									
Kings.....	257	347	2,537 20				1	7 50	2,544 70
Prince.....	574	1,091	7,585 35	1	12	12	1	20 00	7,605 35
Queens.....	133	269	1,889 40	2	24	12	4	56 00	1,945 40
Total.....	964	1,707	12,011 95	3	36	12	6	83 50	12,095 45
<i>Quebec</i>									
Bonaventure.....	484	842	5,985 20	3	33	11	8	97 00	6,082 20
Gaspé.....	2,106	4,212	29,846 85	6	84	14	26	292 00	30,138 85
Matane.....	90	130	944 00						944 00
Saguenay.....	540	1,004	7,101 50						7,101 50
Total.....	3,220	6,188	43,877 55	9	117	13	34	389 00	44,266 55
Grand total..	9,066	15,961	113,913 30	543	14,386	26	3,761	44,462 50	158,375 80

## FISH CULTURE

The more important fresh-water and anadromous food and game fishes, such as Atlantic salmon and speckled trout in the Maritime Provinces, whitefish and pickerel in the Prairie Provinces, and Pacific salmon and trout in British Columbia, were given first consideration in the fish cultural operations of the department during the calendar year 1927, but in response to a constantly increasing public demand greater attention was paid to game fish, and the distribution of game trout was slightly better than ever before.

Some progress was made in the development of a brood stock of trout at the St. John hatchery, New Brunswick, where nearly two and three-quarter million trout eggs were produced during the year. Increased facilities for retaining and feeding fry, so as to afford a longer season for distribution, were provided at several establishments where such development was feasible, as the demand for assistance from areas that are beginning to feel the need of restocking is becoming more and more insistent.

The total distribution was considerably less during 1927 than it was during the previous year, due to the fact that eight hatcheries in Ontario were transferred to the provincial Department of Game and Fisheries in 1926, after the fry produced therein were disposed of, and were not operated by this department in 1927. The distribution from these eight hatcheries in 1926 was approximately four hundred and fifty-four million five hundred thousand, and, omitting the distribution from these establishments, the total output in 1927 was over twenty-seven million greater than in 1926.

In addition to the distributions that were made from the hatcheries, thirty-four lakes and streams received allotments of fry or older fish from other bodies of water. This work was largely confined to the Prairie Provinces, where there are many districts that are not readily accessible to existing hatcheries.



It involved the capture and transfer, in many instances for a considerable distance, of thirty-four thousand nine hundred and twenty-six fish comprising seven different species.

The seeding of remote and isolated waters (to which it is not feasible to transfer fry from existing hatcheries) was continued in British Columbia, and nine million seven hundred and forty-six thousand sockeye salmon eggs, collected in the Pemberton district below Hell's Gate on the Fraser and in the Babine district in the Skeena watershed, were planted in the one-time spawning beds of such important areas as Stuart, Francois, and Quesnel lakes in the Upper Fraser, above Hell's Gate.

Examinations and inspections were continued in the different provinces, with a view to locating waters where trout might be obtained for hatchery purposes, and with a view to locating sites where the fish cultural service might be advantageously extended by the construction of new establishments in districts that are difficult to cover from existing hatcheries.

As opportunity offered, the general inspection of waters throughout the country was continued by the officers and employees of the fish cultural and fishery services.

The Canadian National Railway, Canadian Pacific Railway, Dominion Atlantic Railway, Fredericton and Grand Lake Coal and Railway Company and New Brunswick Coal and Railway, Esquimalt and Nanaimo Railway, Kettle Valley Railway, and the Cumberland Railway and Coal Company continued their assistance and co-operation by furnishing free transportation for shipments of game fish and game fish eggs with their attendants. The extent of this co-operation is indicated by the following summary:—

Railway	Total mileage on trip passes	Number of passages	Mileage Baggage car permit			Number Cases or cans			Number of permits
			Full	Empty	Total	Full	Empty	Total	
C.N.R.....	25,317	235	12,473	11,624	24,097	991	974	1,965	213
C.P.R.....	14,219	95	8,253	7,388	15,641	393	393	786	103
D.A.R.....	2,740	26	1,370	1,370	2,740	136	136	272	26
F. & G.L.C. & R. Co.									
& N.B.C. & R.....	180	4	90	90	180	16	16	32	4
E. & N. Ry.....	1,186	21	666	605	1,271	76	69	145	24
K.V. Ry.....	408	2	270	270	540	2	2	4	4
	44,050	383	23,122	21,347	44,469	1,614	1,590	3,204	374

NOTE.—Number of passages refers to transportation one way. A return trip counts as two passages. Number of permits refers to one-way passage for cases or cans, either by permit, special authority or free transportation without a permit form.

The department participated with assortments of hatchery products and equipment in several exhibits for portraying natural resources. These exhibits were of considerable educational value and attracted great interest.

Gratifying reports regarding the results that are apparent from the distribution of hatchery products continued to come in from all districts where fish cultural operations are carried on in a systematic way.

Considerable expansion was made in the Fish Cultural Service in the provinces in which the fisheries are administered by the Dominion Government. Sites were selected for salmon and trout hatcheries in Antigonish and Yarmouth counties, N.S.; the pond facilities for fry and brood fish were largely extended at the St. John hatchery and a new salmon and trout hatchery was built on White Marsh Creek one mile from Florenceville, N.B.; a contract was awarded for a whitefish hatchery on Lesser Slave Lake, for a trout hatchery in the Waterton Lakes Park, Alberta, and a subsidiary hatchery was established in

the Jasper National Park, Alberta; the Nelson hatchery was moved to larger and better quarters in the basement of the Armory and a sub-hatchery was established at Summerland, B.C. Detailed description appears in the Report of the Fisheries Engineer.

At the close of 1927 there were in active operation, apart from the new establishments above mentioned, twenty-four main hatcheries, seven subsidiary hatcheries, four salmon retaining ponds, and several egg-collecting stations. The output from these establishments for the calendar year 1927 was two hundred and ninety-five million two hundred and eighty-three thousand seven hundred and eighty-two, as shown by species in the following statement:—

STATEMENT, BY SPECIES, OF THE FISH AND FISH EGGS DISTRIBUTED FROM THE HATCHERIES DURING THE YEAR ENDED DECEMBER 31, 1927

Species	Green eggs	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and older fish	Total distribution
<i>Salmo salar</i> —Atlantic salmon.....		503,320	5,916,403	5,652,000	8,199,970		20,271,693
<i>Salmo salar sebago</i> —Landlocked salmon.....		3,400		50,000	93,680	200	147,280
<i>Salmo irideus</i> —Rainbow trout.....		205,700	160,000	32,000	83,259	209	481,168
<i>Salmo clarkii</i> —Cutthroat trout.....		151,840	1,153,310				1,305,150
<i>Salmo rimularis</i> —Steelhead salmon.....		96,505	140,769	4,000	8,007		249,281
<i>Salmo gairdneri</i> —Kamloops trout.....		1,684,000	920,520				2,604,520
<i>Salmo trutta leucomaenis</i> —Lochleven trout.....		3,132				10	3,142
<i>Salmo fario</i> —Brown trout.....		18,684	621,935		33,052	11	673,682
<i>Oncorhynchus nerka</i> —Sockeye salmon.....		29,197,000	65,729,113	608,000	4,658,665	188	100,192,966
<i>Oncorhynchus tshawytscha</i> —Spring salmon.....		755,000	563,448		217,254		1,535,702
<i>Salvelinus fontinalis</i> —Speckled trout.....		221,450	697,025	965,675	1,931,177	6,023	3,821,350
<i>Coregonus clupeaformis</i> —Whitefish.....	2,290,000		143,735,000				146,025,000
<i>Cristiomer namaycush</i> —Salmon trout.....			207,770		78		207,848
<i>Stizostedion vitreum</i> —Pickerel.....			17,765,000				17,765,000
	2,290,000	32,840,031	237,610,293	7,311,675	15,225,142	6,641	295,283,782

The following statement shows the numbers of fry of the different kinds that were distributed in the several provinces in which fish cultural operations are conducted by the Dominion Government:—

HATCHERY OUTPUT, BY PROVINCES, OF EGGS, FRY AND OLDER FISH DURING 1927

Nova Scotia—			
Atlantic salmon.....		7,293,700	
Speckled trout.....		1,347,404	
			8,641,104
New Brunswick—			
Atlantic salmon.....		11,790,198	
Brown trout.....		101,747	
Landlocked salmon.....		147,280	
Lochleven trout.....		3,142	
Rainbow trout.....		30,202	
Salmon trout.....		78	
Speckled trout.....		1,556,509	
			13,629,156
Prince Edward Island—			
Atlantic salmon.....		699,900	
Rainbow trout.....		2,259	
Speckled trout.....		503,496	
			1,205,655
Manitoba—			
Pickerel.....		12,835,000	
Whitefish.....		122,325,000	
			135,160,000

HATCHERY OUTPUT BY PROVINCES, ETC.—*Concluded*

Saskatchewan—			
Pickarel.....	4,930,000		
Salmon trout.....	207,770		
Whitefish.....	21,410,000		
			26,547,770
Alberta—			
Cutthroat trout.....	1,024,740		
Brown trout.....	571,935		
Rainbow trout.....	243,007		
Speckled trout.....	3		
Whitefish.....	2,290,000		
			4,129,685
British Columbia—			
Atlantic salmon.....	487,895		
Cutthroat trout.....	280,410		
Kamloops trout.....	2,604,520		
Rainbow trout.....	205,700		
Sockeye salmon.....	100,192,966		
Speckled trout.....	413,938		
Spring salmon.....	1,535,702		
Steelhead salmon.....	249,281		
			105,970,412
Total.....			295,283,782

Full particulars regarding the extent and scope of this service appear in the Annual Report on Fish Culture for 1927.

## NORTH AMERICAN COMMITTEE ON FISHERY INVESTIGATIONS

Two meetings of the North American Committee on Fishery Investigations have been held during the past year, one at Toronto, Ont., on October 19, 1927, and one at Boston, Mass., on June 2, 1928.

The haddock fishery was given particular attention. Study of the total catch made on this side of the Atlantic reveals that there has been on the whole little change since as far back as the eighties of the last century, though a slow increase since nineteen hundred is evident. This increase has been in the New England fishery. Where formerly haddock were pickled and dried, now they are sold fresh and smoked, as finnan haddies and fillets. The New England fishery has benefited by this change, while in Canada the development of the fresh and smoked haddock trade has scarcely made up for the passing away of the trade in pickled and dried fish. There is no indication that the stock of haddock as a whole is in danger of exhaustion, but rather that increased catches could readily be made. However, the southern banks, where the New England fishery is intensively prosecuted, are, or soon will be, overfished. The committee is urging prompt action in investigating this fishery thoroughly, so that measures for conservation may be devised and adopted before serious depletion occurs.

The co-operative study of the mackerel, which has been in progress for several years past, has revealed the fact that breeding is particularly successful in certain years. 1921 and 1923 were such years and have furnished the bulk of the mackerel recently in American waters. Three important spawning grounds have been found, in which the floating eggs and fry abound during the summer season, (1) the southern shallow part of the gulf of St. Lawrence, (2) the southern part of the gulf of Maine off the Massachusetts coast, and (3) the coastal waters off New York and New Jersey. The migrations of the mackerel, a most fertile field for argument, are being studied by fastening tags to the fish. An entirely satisfactory tag has not yet been devised, but celluloid bands on the tails have been used extensively. These have shown that the mackerel that strike the coast near cape Cod in the spring, remain on the New England coast rather than pass northeastward to Nova Scotia. Those that strike near cape Sable, N.S., in late spring spread both eastward and westward along the coast,



some remaining in the vicinity, some going north into the bay of Fundy, or westward to the New England coast, and others going eastward as far as Cape Breton. These migrations are accomplished by some of the fish at a rate of about twenty-five miles per day. Mackerel that come to the coast near Canso, at the eastern end of Nova Scotia, in part migrate around Cape Breton into the gulf of St. Lawrence to the coast of Prince Edward island, but none go westward. The evidence indicates that a series of schools strikes the various parts of the coast, and that these remain fairly distinct, but not completely so. Mixing of the schools is somewhat greater during the winter, as recaptures of the fish in subsequent years show greater spreading up and down the coast.

Mr. Sette, under the Sub-Committee on Statistics, prepared a report on the cod fisheries of the American side of the North Atlantic, in which five countries, Newfoundland, France, Canada, United States, and Portugal, have participated. This report brings together the available statistics on this fishery so as to show its size, trend, and the relative importance of the fisheries of each participating country. The report, entitled "Statistics of the Catch of Cod Off the East Coast of North America to 1926," has been published.

The study of the fisheries statistics of the various countries has revealed the need for having the weights of the fish uniformly taken on the basis of a particular condition of the fish, for example either "round" or "gutted". Steps are being taken toward this end.

#### INTERNATIONAL FISHERIES COMMISSION

This commission was appointed under the provisions of the Treaty for the Protection of the Pacific Halibut between Canada and the United States, and is charged with making a thorough investigation into the life history of the Pacific halibut, as well as recommendations to the two Governments as to the regulation of the fishery which may seem desirable for its preservation and development. One of the provisions of the Treaty provides for an annual close season of three months—November 16 in each year to February 15 following, both days inclusive—but upon the recommendation of the commission this close season may be modified or suspended at any time after three such seasons. As the treaty became effective on November 1, 1924, the third close season expired in February of this fiscal year, and as anticipated in my report of last year the commission, immediately following the termination of that close season proceeded to prepare its first report. The following extract from the report shows the extent and condition of the fishery, and the recommendations of the commission:—

Fisheries for halibut are prosecuted in the North Pacific and the North Atlantic oceans, and yield about ninety millions of pounds annually. The Pacific halibut fishery, which is covered by the terms of this convention, is the greatest in the world. The annual catch exceeds fifty millions of pounds, which represents about sixty per cent of the world's catch. Of the remainder about thirty millions are credited to European countries and six millions to the Atlantic coast of this continent. The value of the Pacific halibut catch to the fishermen is about seven million dollars annually, and it is consequently one of the most important fisheries in North American waters. The Pacific halibut is, therefore, one of the most important species of food fishes indigenous to the waters of the North American continent. The halibut fishery banks of the eastern Pacific are shown in plates Nos. 1-3. The division into areas shown thereon is for statistical purposes and should not be confused with those referred to in the commission's recommendations, which will be submitted later on.

The Pacific halibut fishery originated soon after the first railway communication was established between the two coasts of the United States. It is, therefore, comparatively young. It had its inception in 1888 near cape Flattery, at the entrance to Juan de Fuca strait. The fishery expanded rapidly and by 1910 it had extended to grounds off cape Ommaney, Baranof island, six hundred miles to the north. Subsequent expansion has extended the fishery until it now covers about 1,800 miles of coast. Formerly as many fish were taken from the 600 miles stretch as are now procured from the entire area of 1,800 miles. The banks on the eastern side of the gulf of Alaska, which yield spawning fish, were

first exploited in 1913. In 1926 the larger boats made by far the greater part of their catches in the vicinity of Kodiak island, on the western side of the gulf of Alaska, about 1,200 miles beyond the original fishery. The catch on the older grounds south of cape Ommaney has decreased from a total in excess of fifty million pounds in 1910 to about twenty-one millions in 1926, and much greater effort was exerted in making the catch in the latter year. It is evident that the present level of production has been maintained by extending fishing operations to new areas, as the catch on the older grounds decreased, and by increasing the intensity of the fishing effort.

The amount of gear now used on the older banks is about two and one-half times the quantity formerly used, yet the present catch is only about forty per cent of the former yield from these grounds. Under the stress of this great intensification of fishing effort the abundance of fish on the older banks has fallen enormously, to sixteen per cent of the abundance in 1906. Where in 1906 the catch per set of a unit of fishing year was nearly 300 pounds, in 1926 it was below 50 pounds. Expressed in another way it required six units of gear to catch as many fish as one unit caught in 1906. The decline has gone on at an even rate and shows no tendency to slacken. Accompanying this fall in abundance there has been a decrease in the average size of the fish landed, and a great increase in the percentage of undersized fish. For example between 1919 and 1926 the percentage of undersized fish from the older banks increased from twenty to thirty per cent.

The more recently exploited banks to the westward show the same trend, the catch having fallen from 160 pounds per unit of gear in 1923 to 100 pounds in 1926, and was still lower in 1927, while at the same time there was an increase in the number of fish under eleven and three-quarter pounds.

The rapidity of the decline is regarded as especially serious because of the very slow rate of the growth of the halibut, an adult being from twelve to twenty-five years, or over, in age. Hence the present decline has taken place within the life span of one halibut of ordinarily large size. As nearly all the fish which are being caught now were spawned eight or ten years ago, the abundance of the younger fish, which will annually be available for capture in the next ten years, has already been established. If these are greatly reduced in numbers, and the intensity of the fishery is maintained, the outlook for a future stock of spawning fish sufficient to maintain the supply, presents a hopeless picture. In fact the commission's investigations indicate that relatively few mature halibut are now found on the older banks.

These illustrations demonstrate beyond a doubt that the fishery is in a very serious condition, and that the banks cannot stand the intensity of fishing to which they are subjected. The commission is fully convinced that the conditions are so serious that no delay should be permitted in the adoption of additional conservation measures. In the light of the investigations made, such action is essential to the maintenance of the fishery.

#### RECOMMENDATIONS

It is recommended that power be given proper governmental authorities:—

1. (a) To establish areas, within each of which, if deemed necessary for the preservation of the fishery there, the total catch of halibut may be reduced by a predetermined percentage annually, commencing not less than one year after the putting into force of this recommendation, until the fishery therein shall reach a state of stability of yield.

- (b) To determine upon the amount of this percentage reduction, and to revise the same from time to time as may be found necessary, the intent being to restrain any increase in the amount of fishing within such area.

2. To close permanently to all fishing the two areas herewith defined, and known to be populated by small immature halibut, and to close such other grounds as may be found by the commission to be populated by a similar class of fish.

3. To prevent the use of any fishing gear deemed unduly destructive.

4. To extend the present closed season by two weeks at its beginning, making the closure for all fishing in all areas from November 1 to February 15, both dates inclusive, and to facilitate future alterations in the length of close season.

5. To license all vessels fishing for halibut in treaty waters, under such terms as are necessary for the purpose of the treaty, including statistical returns, and for clearance to regulated waters.

The reasons for the above recommendations are clearly set out by the commissioners. The report has been printed and those interested may obtain copies thereof on application to the department.

The recommendations of the commission are under the consideration of the two Governments.

## MARINE BIOLOGICAL BOARD

All four stations of the Board were in operation during the year. These are located at St. Andrews, N.B., Halifax, N.S., Nanaimo, B.C., and Prince Rupert, B.C.

At St. Andrews and Nanaimo fundamental researches such as life-history, growth and food of fishes, etc., and at Halifax and Prince Rupert investigations connected with the methods of handling and preserving the products of the commercial fisheries are carried on.

In the course of the year the staff of the board on the Atlantic coast conducted short scientific and practical courses of instruction for hatchery officers, cannery managers and fishermen, all of which were beneficial and much appreciated.

During the year an arrangement was come to by the Department, the board, and Dalhousie University of Halifax, N.S., whereby with the assistance of the department and the board the university has undertaken to establish a graduate course in fisheries. It is anticipated that the first stages of the course will be started in the coming university year.

The following were members of the board and its various committees during the year:—

Dr. J. Playfair McMurrich, Chairman, Toronto, Ont.  
 J. J. Cowie, Hon. Secretary-Treasurer, Ottawa, Ont.  
 Dr. Philip Cox, Fredericton, N.B.  
 Dr. C. J. Connolly, Antigonish, N.S.  
 Dr. E. E. Prince, Ottawa, Ont.  
 Very Rev. Canon Huard, Quebec, P.Q.  
 Dr. A. H. Hutchinson, Vancouver, B.C.  
 Dr. W. T. MacClement, Kingston, Ont.  
 Professor J. N. Gowanlock, Halifax, N.S.  
 Professor A. Willey, Montreal, P.Q.  
 John Dybhavn, Prince Rupert, B.C.  
 A. Handfield Whitman, Halifax, N.S.

## MEMBERS OF CENTRAL EXECUTIVE COMMITTEE

Dr. J. P. McMurrich. J. J. Cowie.  
 Dr. W. T. MacClement. Dr. E. E. Prince.  
 Professor A. Willey.

## MEMBERS OF ATLANTIC SUB-EXECUTIVE COMMITTEE

A. Handfield Whitman, Chairman.  
 Professor Gowanlock.  
 Dr. C. J. Connolly.  
 Dr. A. G. Huntsman, Secretary.

## MEMBERS OF PACIFIC SUB-EXECUTIVE COMMITTEE

John Dybhavn, Chairman.  
 Dr. A. H. Hutchinson.  
 Dr. W. A. Clemens, Secretary.

## RESEARCH COMMITTEE

Dr. A. G. Huntsman, Chairman.  
 Dr. W. A. Clemens.  
 Dr. A. H. Leim,  
 Mr. J. A. Rodd,  
 Dr. R. E. Foerster, Secretary.

A detailed report on the work of the board's staff will be found at appendix No. 2 of this publication.



## PROSECUTIONS

The names of those against whom action was taken as a result of the violation of the Fisheries Act are being published in this report separately and will be found in appendix No. 8.

## SCALLOP AND OYSTER INVESTIGATIONS

The following investigations were carried on by the department's naturalist during the season of 1927:—

Scallop investigations in Mahone Bay, N.S.

Exploratory work on the coast of three Maritime Provinces in search of scallop beds.

Examination of oyster beds in New Brunswick.

Details of these investigations will be found in appendix No. 3.

The loss of life of those engaged in the industry was very heavy, no less than four vessels and their entire crews being lost in one storm on the Atlantic coast. The total loss of life was one hundred and eleven, three of whom were drowned on the Pacific coast and the remainder on the Atlantic coast.

Your obedient servant,

A. JOHNSTON,  
*Acting Deputy Minister of Fisheries.*

## APPENDIX NO. 1

## REPORTS OF INSPECTORS OF FISHERIES

REPORT OF CHIEF INSPECTOR WARD FISHER, PROVINCE OF  
NOVA SCOTIA, FOR 1927-28

The value of the fisheries for this province for the year 1927 was \$10,783,631. While this does not compare altogether favourably with the previous year, it must be remembered that 1926 was a banner year with a total value amounting to \$12,505,922. This latter value has not been exceeded since the years closely following the end of the war. In order to arrive at a better valuation other than 1926 we must go back to the year 1920, when prices were inflated and the total value amounted to \$12,742,659.

The value of the fisheries to the province of Nova Scotia for the past five years has been as follows:—

1923 . . . . .	\$ 8,448,385
1924 . . . . .	8,777,251
1925 . . . . .	10,213,779
1926 . . . . .	12,505,922
1927 . . . . .	10,783,631

Weather conditions throughout the greater part of the year were unfavourable for fishing. Rough, boisterous, and foggy weather prevailed.

The fresh fish industry was in an unsatisfactory condition at the opening of the year. The unusually mild weather of November and December, 1926, resulted in large catches which the dealers were unable to dispose of, and as a consequence there was, at first, little demand for the catches of the shore fishermen at a price that would give a living wage. It is gratifying, however, to report that the fresh fish trade is continually expanding, and that there is an increased demand particularly for finnan haddies and fillets.

The catch of the chief commercial varieties shows a decrease in most instances as compared with the year before, with the exception of the mackerel, halibut, and scallop fisheries.

## COD

The catch was 1,331,873 cwt., with a landed value of \$2,433,699 and a marketed value of \$3,455,722, as compared with a catch of 1,858,944 cwt., having a landed value of \$3,634,923 and a marketed value of \$4,652,858 for 1926. The decrease in the catch as compared with the preceding year was 527,071 cwt., the landed value \$1,201,224, and the marketed value a decrease of \$1,197,086.

The Lunenburg fleet was a vital factor in the decrease shown in the cod fishery. In this connection it must be recalled that four of the Lunenburg vessels were lost in the gale of August 24 along with their crews of more than eighty men. The shore fishermen were also handicapped by unfavourable weather.

## THE LOBSTER FISHERY

The total lobster catch for 1927 was 179,673 cwt., having a marketed value of \$3,255,627, as compared with 184,316 cwt. and \$3,386,416 for 1926.

The total pack for 1927 was 55,771 cases, as compared with 56,277 cases. The total value of the pack was \$1,727,105 for 1927, as compared with \$1,753,150 for 1926.

The total marketed value for 1927 was \$3,255,627, as compared with \$3,386,416 for 1926.

The following is the catch and pack by counties:—

	Catch		Pack	
	Cwts.	Marketed value	Cases	Value
		\$		\$
Inverness.....	14,590	192,704	5,926	177,678
Richmond.....	8,575	110,530	2,806	85,352
Cape Breton.....	12,111	186,948	5,965	180,133
Victoria.....	7,248	75,260	1,600	62,418
	42,524	565,442	16,297	505,581
Halifax.....	13,207	235,960	3,014	92,790
Guysboro.....	20,364	352,859	6,844	213,708
Antigonish.....	10,425	182,843	5,845	177,834
Pictou.....	14,002	273,427	7,629	229,991
Colchester.....	176	2,716	83	2,407
Cumberland.....	4,812	64,146	1,914	56,196
	62,986	1,111,951	25,329	772,926
Lunenburg.....	3,724	64,267	590	18,300
Queens.....	3,818	58,528	186	6,324
Shelburne.....	21,708	474,694	5,277	162,102
Yarmouth.....	34,542	730,247	7,003	227,254
Digby.....	9,683	229,749	1,089	34,618
Annapolis.....	609	19,554		
Kings.....	79	1,195		
	74,163	1,520,234	14,145	448,598

The marketing of the pack was not profitable. Prices were low and demand poor. Japanese crab meat was offered, especially in the European market at a very attractive price which greatly interfered with the success of the lobster packers.

#### HADDOCK

The landings of haddock amounted to 384,207 cwts., as compared with the previous year when 458,292 cwts., were taken. The landed value for the year was \$660,669 and the marketed value \$1,402,135, as compared with a landed value of \$838,716 and a marketed value of \$1,671,971 for 1926. The decrease in the landed value was \$178,047 and the marketed value \$269,836.

#### THE MACKEREL FISHERY

The mackerel fishery shows an increase in the catch, landed value and marketed value. During the year 72,306 cwts. were landed, as against 67,580 cwts. in 1926. The landed value was \$236,796 and the marketed value \$338,851, as compared with a landed value of \$173,049 and a marketed value of \$285,961 for the previous year. The increase in the marketed value registers \$52,890.

#### HERRING

The landings of herring were less than in 1926 when the catch was 264,823 cwts., as compared with a catch of 214,560 cwts. this year. Naturally the values also fell off. The marketed value this year was \$482,458, as compared with \$547,548 last year, a decrease of \$65,090.



## HALIBUT

The halibut fishery shows an increase in landings and values. This year the catch was 27,551 cwts., as against 23,725 cwts. in 1926. The increase in the landed value was \$46,771 and the marketed value \$86,959. Most of the months record this fishery as showing gains over the previous year.

## SALMON

The salmon catch was 12,819 cwts., having a marketed value of \$233,189, as compared with 13,428 cwts. and \$253,272 in 1926.

## SCALLOPS

The scallop fishery especially in the Bay of Fundy district continues to expand and show a healthy growth. The outlook for this fishery is bright indeed. Many more new boats were engaged in this fishery this year than in any previous year, and it is confidently expected that the output will steadily increase from year to year. This industry is only in its infancy in so far as Yarmouth, Digby and Annapolis counties are concerned, and the progress that has already been made is really remarkable. This year 37,607 barrels were landed, as compared with 19,918 barrels last year. The marketed value was \$212,838, as against \$138,472 for 1926, an increase of \$74,366.

## SMELT

The decrease in the smelt catch is largely attributed to the mild weather which prevailed during the early part of the smelt fishing season, 7,110 cwts. were taken while the catch last year was 10,981 cwts. The marketed value of the fishery naturally suffered, amounting to \$124,653 this year, as compared with a value of \$165,630 last year.

The following reports by districts will be of interest, showing the local conditions with respect to catches and values:—

## DISTRICT NO. 1, CAPE BRETON.—INSPECTOR MCLEOD

The outstanding features of the year, compared with 1926, are decreases in the quantities and values of cod, haddock, swordfish, lobsters, smelts, pollock and alewives, and increases in the quantities and values of mackerel, halibut, salmon, hake and cusk.

*Lobsters.*—The catch of lobsters was 42,524 cwts., marketed value \$565,442, as compared with 42,874 cwts., marketed value \$660,006 for 1926.

The decrease in the catch is due to unfavourable weather conditions and drift ice which prevented operations at the opening of the season. These fish were very plentiful in the waters surrounding Isle Madame, where an increase of 2,017 cwts. is noted as compared with 1926. On account of the low prices offered for cod, haddock and mackerel, the fishermen of this district prosecuted the lobster fishing with the utmost vigour.

The largest catches were landed at Mainadieu, Petit de Grat and Port Hood Island.

*Cod.*—The catch was 139,096 cwts., having a marketed value of \$290,882, as compared with 136,505 cwts. and \$394,870 for 1926.

A large increase in the catch is noted at the ports of North Sydney, Ingonish and Neil's harbour, where this branch of the industry was prosecuted intensely during the fall months when good prices prevailed.

*Haddock.*—The total catch was 68,344 cwts., having a marketed value of \$132,485, as compared with 76,428 cwts., and \$250,569 for 1926.

Decreases of 8,084 cwts. in the catch, and \$118,084 in marketed value are noted. The large falling off in the catch is due to the following reasons: (a) Rather than fish for the low prices offered the fishermen turned their attention to other kinds of work which they found more remunerative. (b) Only one trawler operating, as compared with four during 1926. (c) These fish were not as plentiful as in the previous year, and it is supposed that they passed by before the trap-nets were set in the spring.

The largest catches were landed at Ingonish, Hawkesbury and Petit de Grat.

*Mackerel*.—The catch was 29,832 cwts., having a marketed value of \$122,425, as compared with 20,473 cwts., valued at \$84,623 for the preceding year, showing an increase of 9,359 cwts. in catch and \$37,802 in marketed value.

The largest landings were at L'Ardoise, Cheticamp and Louisburg.

These fish were very plentiful during the spring at Ingonish, Neil's harbour and Isle Madame; but on account of the low prices offered, the fishermen only operated in a half-hearted manner. Fine catches were landed at Margaree and cape Rouge during the fall. For some unaccountable reason the fall run of mackerel do not appear in the waters surrounding Port Hood island, where they used to strike in very plentifully eight or ten years ago.

*Halibut*.—The catch was 4,772 cwts., having a marketed value of \$92,194, as compared with 3,775 cwts., and \$54,102 for the previous year, showing an increase of 997 cwts. in the catch and \$38,092 in marketed value.

The increase in the catch is due to more bankers landing at North Sydney, as well as an increase in the catch for Ingonish, owing to more fishermen having engaged in this branch of the industry.

The largest landings were at North Sydney, Port Morien and Ingonish.

*Salmon (Commercial)*.—The total landed catch was 4,897 cwt., having a marketed value of \$78,436, as compared with 4,648 cwt., valued at \$76,720, for the preceding year, showing an increase of 249 cwt., in the catch and \$1,716 in marketed value.

These fish were unusually plentiful in the Mira river, and increases in the catch are noted in Grand river also. Salmon were fairly plentiful at Port Hood, Margaree, Cheticamp and bay St. Lawrence.

*Salmon (Sport)*.—The number of anglers visiting the Margaree river is increasing from year to year. It is most gratifying to report an increase of 379 salmon landed with the fly in the Margaree river, as compared with the previous year. Also, that these fish were of a larger size; one fish landed at Big Intervale, North East Margaree, weighed 52½ pounds. Fly fishing in the Margaree river was most satisfactory, except during a period from the middle of July to the middle of August when the water was very low, warm and clear. After the gale that occurred on the 24th of August, salmon ascended the Margaree river in enormous numbers, and most satisfactory catches were landed.

In the history of the Margaree the catch with the fly was eclipsed only in the banner season of 1922, when 868 fish were landed.

*Swordfish*.—The total catch was 5,376 cwt., valued at \$86,534, as compared with 6,594 cwt., valued at \$114,112 for the preceding year, showing a decrease of 1,218 cwt. in catch, and \$27,578 in marketed value.

The decrease is due to scarcity and unfavourable weather conditions, as these fish will only remain on the surface during bright and calm weather. Increases are noted at the ports of North Sydney and Ingonish, where more fishermen were engaged in this branch of the industry. Largest landings were at Louisburg, Glace Bay, and North Sydney.



*Herring.*—The catch was 26,604 cwt., having a marketed value of \$43,191 as against 35,641 cwt., having a value of \$83,005 showing a decrease of 9,037 cwt. in the catch, and a decrease of \$39,814 in marketed value.

The increase in the catch is due to the spring herring being exceptionally plentiful at Isle Madame, North Sydney and St. Ann's, and the decrease in the values is caused by a great falling off in the catch of the July run, as compared with the previous year.

*Smelts.*—The catch of smelts was 1,727 cwt., having a marketed value of \$26,427 as compared with 2,687 cwt. having a value of \$34,958 for the preceding year, showing a decrease of 960 cwt., in the catch, and \$8,531 in marketed value.

The great falling off in the catch is due to scarcity, and mild weather prevailing at the opening of the season.

*Oysters.*—The catch was 1,224 barrels, valued at \$10,347, as compared with 1,280 barrels, valued at \$9,502, for the preceding year, showing a decrease in the catch of 56 barrels and an increase of \$845 in the marketed value.

The largest catches were landed at Orangedale, River Dennys, and Little Narrows.

*Trout.*—Compared with the preceding year trout were far more plentiful, and as usual, excellent catches were taken at Lake Ainslie, River Dennys, Barachois and Indian Brook, St. Ann's. A trout landed with the fly at the outlet of Barachois river, St. Ann's, weighed 6 pounds 4 ounces. Many trout weighing over 5 pounds were landed in several of the streams of this island.

DISTRICT NO. 2.—COMPRISING THE COUNTIES OF HALIFAX, GUYSBORO, PICTOU, COLCHESTER, CUMBERLAND AND HANTS—INSPECTOR SUTHERLAND

The catch as well as the landed and marketed values show marked decreases compared with 1926, but the values compare favourably with those of 1925, although the catch is the lowest since 1923. This is due to smaller landings of all the principal varieties, excepting lobsters, hake, soles, mackerel and albacore. Cod and haddock show heavy decreases of 145,805 cwt. and 56,724 cwt., respectively, due chiefly to smaller landings at Canso and Halifax by steam trawlers. Only one trawler operated the full year at Canso, and fish were not found to be plentiful offshore. Another important reason for the smaller catch during the summer and autumn months was the unusually rough weather which greatly hampered the inshore operations. The only important increases are those of lobsters 2,529 cwt., soles 2,902 cwt., and albacore 686 cwt.

*Cod.*—The total catch was 212,876 cwt., with a marketed value of \$896,947 as compared with 360,681 cwt., with a marketed value of \$1,269,989 for 1926, showing a decrease of 147,805 cwt. in the catch, and \$373,042 in the marketed value.

Decreased catches were general throughout but are more pronounced at Halifax and Canso. A succession of gales during the summer and early autumn greatly hampered inshore operations and the fishermen were disheartened by unusually low prices. These opened at 1 cent per pound with only large fish wanted. However, as the season advanced, prices improved until 2½ cents to 3 cents were offered at the last of the season.

Of the total catch, 100,865 cwt. were taken offshore as compared with 227,698 cwt., taken offshore in 1926.

*Haddock.*—The catch was 191,934 cwt., having a marketed value of \$884,238, as compared with 249,719 cwt., having a market value of \$1,007,035 for 1926, showing a decrease of 57,785 cwt., with a corresponding decrease in the marketed value of \$122,797.



Guysboro county east is mostly responsible for the decrease, where only 53,619 cwt. were taken as compared with 1926—94,515 cwt. This is on account of only one trawler being operated in the summer and early autumn months. No haddock are taken by shore boats until November.

Of the total catch, 173,363 cwt. were taken offshore, as compared with 214,421 cwt. in the previous year. Prices to fishermen were about the same as for cod.

*Pollock.*—The catch was 8,180 cwt., having a marketed value of \$12,694, as compared with 19,401 cwt., having a marketed value of \$36,997, showing a decrease of 11,221 cwt. in the catch and \$24,303 in the marketed value.

The decline was most serious in Halifax county west and Guysboro county east, which is general for all line fish excepting hake during 1927.

Of the total catch, 5,399 cwt. were taken offshore, whilst 14,850 cwt. were taken offshore in 1926.

Prices to the fishermen were about 1 cent per pound, although for a period in the summer only 50 cents per cwt. was offered.

*Hake.*—The catch was 5,391 cwt., having a marketed value of \$12,955, as compared with 3,623 cwt., having a marketed value of \$8,535 for 1926, an increase of 1,768 cwt. and \$4,420 in marketed value.

The increase is due to increased catches in Antigonish county, Halifax west, and Guysboro east.

Offshore catch was 342 cwt. Prices landed, 75 cents per cwt. Market prices: dried \$4, green salted \$3, and smoked fillets 10 cents.

*Halibut.*—The catch was 7,240 cwt., having a marketed value of \$146,871, compared with 8,039 cwt., having a marketed value of \$164,462, a decrease in catch of 799 cwt. and value of \$17,591.

Smaller catches in Halifax west and Guysboro east account for the decrease. The offshore catch was 5,754 cwt., compared with 6,391 cwt. for 1926.

*Herring.*—The catch was 54,609 cwt., having a marketed value of \$146,784, compared with 68,984 cwt., having a marketed value of \$136,298, a decrease of 14,375 cwt. in the catch and an increase of \$10,486 in marketed value.

The catch of spring herring in Cumberland county north was a failure. Antigonish and Guysboro counties also show heavy declines, while in Halifax county west the catch increased 9,000 cwt.

*Mackerel.*—The catch was 34,003 cwt., having a marketed value of \$160,908, compared with 34,334 cwt., having a marketed value of \$149,231.

While the catch shows a decrease of 331 cwt., the marketed value shows an increase of \$11,677. This is due to better prices offered to the fishermen during the late run of mackerel in October and November.

Increased catches were taken in Guysboro County, while Halifax county is responsible for the decrease. During November fairly good catches were taken in Chedabucto bay and Halifax county west. Prices then were good and the fishermen did well. The fall run was unusually late; in fact, in Queensport Harbour all the nets were ashore and one fisherman who had been unable to take his nets ashore on account of sickness found a good catch when he was able to tend his gear, and the other fishermen soon had their nets out again.

Prices landed: May, 4 cents; June, 3 cents; July, 3 cents; August, 3 cents; September, 4 cents; October, 5 cents; and November, 6 cents per pound.

*Salmon.*—The catch was 5,886 cwt., having a marketed value of \$113,971, compared with 7,610 cwt., having a marketed value of \$149,695, a decrease in the catch of 1,724 cwt. and marketed value \$35,724.

Halifax county west alone shows a decrease of 1,968 cwt., Guysboro county shows a considerable increase, while in Antigonish the increase was 1,000 cwt., and in Pictou county 200 cwt. This fishery is in a flourishing condition in these two counties, the marketed value for 1927 being about \$65,000.

*Flounders, Skate, and Soles.*—Flounders and skate decreased 4,511 cwt. and 7,722 cwt., while soles increased 7,264 cwt. These fish are almost entirely produced offshore by steam trawlers.

*Catfish and Monkfish.*—1,972 cwt. less catfish were taken, and no monkfish for 1927, while 180 cwt. were landed last year. The entire catch of these varieties is produced offshore.

*Albacore.*—The catch was 1,575 cwt., with a marketed value of \$15,750, compared with 889 cwt., having a marketed value of \$8,890 for 1926.

These fish were fairly plentiful during July in St. Margaret's bay, where the entire catch was taken.

*Swordfish.*—The catch was 1,715 cwt., with a marketed value of \$30,795, as compared with 6,176 cwt., with a marketed value of \$90,694 for 1926, showing a decrease in catch of 4,461 cwt. and marketed value \$59,899.

Guysboro county is responsible for the decrease, particularly the eastern part, where the decline was 2,176 cwt. Prices for ground fish were low during the swordfish run, and fishermen generally lost a lot of time and went to great expense in endeavouring to capture swordfish. It is usually the case that fishermen give up regular fishing when swordfish are on, and unless the fish are plentiful their efforts usually result in a loss.

DISTRICT NO. 3.—COMPRISING THE COUNTIES OF LUNENBURG, QUEENS, SHELburnE, YARMOUTH, DIGBY, ANNAPOLIS, AND KINGS—INSPECTOR MARSHALL

*Cod.*—The greatest fall-off was in connection with the catch and value of the Lunenburg cod fishing fleet. This of course would have a tendency to decrease the quantity and the total value of the catch.

*Haddock.*—The catch and value of haddock remains about the same as the last few years, showing a slight decrease from last year.

*Hake and Cusk.*—This fishery shows an increase over last year and a considerable increase over previous years.

*Halibut.*—The halibut fishery shows a large increase both in catch and value.

*Herring.*—The catch of herring was 133,347 cwt., with a value of \$276,047, as compared with a catch of 160,198 cwt. valued at \$328,245 for 1926. The year 1926 was one of the best years the herring fishermen have had for some time.

*Mackerel.*—The mackerel fishery in so far as this district is concerned remains in a more or less depleted condition.

*Salmon.*—The salmon fishery is gradually on the increase; 2,036 cwt. were taken with a value of \$40,782, which compares very favourably with the catch and value for the last five years.

*Scallops.*—During the year 1927, 37,579 barrels of scallops were taken in this district with a value of \$212,698. This fishery is showing a steady and continued increase from year to year, especially in the Bay of Fundy district.

THE LUNENBURG FLEET

The total value of the season's catch was approximately \$1,500,000 and the total catch was 227,590 quintals, or 115,140 quintals short of the previous year's catch. The schooner *Gladys Mosher*, Captain John Mosher, was the high liner of the fleet with 4,540 quintals.



The estimated monetary value of the shortage of the catch of the Lunenburg fleet this year in comparison with last year is \$300,000 and the shortage of last year from the year before was around \$100,000. Therefore the loss to the industry in the past two years is about \$400,000.

These figures do not include the loss of vessels, etc., which for the past two years has been appalling. Four staunch vessels of the Lunenburg fleet were lost in the big gale of August 24. Their entire crews, numbering over eighty men, also perished. The vessels lost were the *Uda R. Corkum*, Captain Wilfred Andrews; *Malaha*, Captain Warren Knickle; *Joyce M. Smith*, Captain Edward Maxner; *Clayton W. Walters*, Captain Mars Selig.

The cost of vessels and equipment together with running expenses was high, and therefore money was not readily obtainable, and the industry was not expanded as it should have otherwise been.

The number of vessels engaged in fishing in 1927, including those lost, was eighty-three, nine less than in the previous year. Two new vessels were completed to be added next year to the fleet, but then it must be remembered there were four vessels lost during 1927, so that the fleet in 1928 will no doubt be smaller than in 1927. Each year shows an increased number of Newfoundland men manning the Lunenburg fleet. One of the vessels lost this year, the *Joyce M. Smith*, had with the exception of the captain and two men an entire crew of Newfoundland men.

Fifty-eight vessels on the frozen bait trip landed 30,700 quintals; seventy vessels on the spring trip landed 60,390 quintals; and seventy-nine vessels on the summer trip landed 136,500 quintals.

The prices received this year were slightly in advance of those received last year. In 1926 the fishermen received from \$5.50 to \$6 for their first two trips, and \$5.50 for their summer trip. This year the frozen bait trip brought around \$6.35 per quintal, the spring trip was sold at \$5.80 to \$6.40, and the summer catch around \$7.

#### BAIT AND ICE REPORTING SERVICE

For the benefit of the fishermen of Nova Scotia and others immediately interested in the fishing industry it was decided to resume reporting, during the spring, ice conditions and bait supplies at the Magdalen islands. The fishery officer at Grindstone, Magdalen islands, was instructed to forward a telegram once per week until bait appeared, after which to send one every day, except Sunday, until the end of the spring herring season. The information received was of particular value to those interested, especially at such fishing centres as Lunenburg, Riverport, and Canso.

The first report was received on April 22, and dealt with ice conditions, as no herring had as yet appeared. Herring were reported on May 13, and from that time on reports were received regularly until the end of the spring run, around the second week in June. This service was much appreciated by the fleet engaged on the banks.

The contents of the reports as received were posted prominently in the chief fishing centres and given publicity in the Halifax papers.

#### THE STEAM TRAWLER

Owing to the increased demand and expanding market for fresh fish, the steam trawler fleet was augmented by two vessels, viz., the *Bonthorpe* and the *Sleaford*. Both the *Bonthorpe* and the *Sleaford* came to the Maritime Fish Corporation, Ltd., and operated from Canso. The *Bonthorpe* was constructed at Collingwood, Canada, in 1927, and the *Sleaford* at Selby, England, during the same year. Each vessel operated from Nova Scotia for a period of approximately three months.



Each year shows an increase in the number of steam trawlers employed from Nova Scotia ports. During 1926 eleven were in operation, while 1927 saw fourteen engaged. They were as follows:—

Name of Vessel	Port Operated From
<i>Offa</i> .....	Canso, N.S.
<i>Rayon D'Or</i> .....	Canso, N.S.
<i>Lemberg</i> .....	Halifax, N.S.
<i>Venosta</i> .....	Halifax, N.S.
<i>Good Hope</i> .....	Halifax, N.S.
<i>Loubyrne</i> .....	Halifax, N.S.
<i>Lord Beaconsfield</i> .....	Canso, N.S.
<i>Lord Darling</i> .....	Canso, N.S.
<i>Lord Shaftesbury</i> .....	Canso, N.S.
<i>Viernoe</i> .....	Halifax, N.S.
<i>Willoughby</i> .....	Halifax, N.S.
<i>Bonthorpe</i> .....	Canso, N.S.
<i>Sleaford</i> .....	Canso, N.S.
<i>Cape Agulhaus</i> .....	Halifax, N.S.

#### HAIR SEAL MENACE

The hair seals in this province have been in the past, and still are, very destructive to the commercial fisheries, especially the salmon and smelt fisheries. This matter has been of considerable concern to the department, and various means and ways of destroying the seals have been attempted without a great deal of success until the present year.

Some years ago a bounty of \$1 per seal was offered, but it was claimed that this amount was inadequate. The decision of the department this year to pay a bounty of \$3.50 for each hair seal destroyed has resulted in the destruction of a considerable number of the species, which has naturally had a beneficial effect on the commercial fisheries of the province.

The new bounty went into operation in April, and up to the last of the present calendar year 2,754 seals have been turned in and their snouts delivered to officers of the department throughout the province.

It is estimated that at the close of the fiscal year March 31, 1928, some 3,300 seals will have been destroyed and turned in.

The continuation of this bounty next year should result in the destruction of a considerably increased number of seals.

#### SCHOOL OF INSTRUCTION FOR INSPECTORS AND FISHERY OFFICERS

A school of instruction for inspectors and fishery officers was conducted by the Biological Board of Canada at the Atlantic Experimental Station, Halifax, N.S., from February 14 to 26 inclusive. Three district inspectors of this province were in attendance as well as sixteen fishery overseers from Nova Scotia, together with a number of inspectors and overseers from the provinces of New Brunswick and Prince Edward Island. The various subjects taken up during the course aroused considerable interest and resulted in a very beneficial effect upon all those in attendance. Many subjects were dealt with and the time engaged was well spent. All the officers attending were alert, active and very much interested in the various phases of the industry covered by the lectures and classes of instruction.

#### FISH COLLECTION SERVICE

On that portion of the Guysboro county coast between Canso and Port Bickerton an experiment was tried out in the collection of fish by Government subsidized boats, which carried the fish to Canso for delivery to the dealers at a nominal rate of freight.

Two boats were first engaged but owing to rough weather and the difficulty of securing ice supplies, a third boat was later engaged to assist. These boats plied between Canso and Port Bickerton, calling at all points where fish were offered, carrying ice and bait from Canso to the fishermen and bringing their catches back to Canso. The service was highly satisfactory in spite of unusually rough and foggy weather, and the fishermen for the first time were able to dispose of their catches fresh for better cash prices. They were assured of a regular supply of bait and relieved of the work of splitting their catches which enabled them to remain longer on the fishing grounds. Later fishing was also encouraged which requires larger boats, these, the fishermen will probably arrange for if the service is continued.

A total of 2,832,325 pounds of fish were carried by the collection boats at a cost to the public which, apparently, quite justifies the continuation of the service.

#### RIVER AND INLAND FISHERIES

Sport fishing is a distinct asset to the province and is becoming more so as the influx of tourists steadily increases from year to year. Good catches of salmon and trout were taken by anglers throughout the whole province. The rainfall during the summer was exceptionally heavy and provided many periods of high water conditions which enabled salmon to ascend the numerous rivers and streams.

Many salmon were taken on the fly on the various rivers and streams in Halifax and Guysboro counties. The St. Mary's river, Guysboro county, is an exceptionally good river and salmon sport fishermen are visiting it more and more every year. This year they were quite successful in their operations. Most of the rivers in the above counties flow through country which is unsuitable for agriculture, and while some deforestation has taken place, the low temperature and volume of the streams have been maintained so that they make ideal salmon waters.

Anglers for salmon were exceptionally successful in such rivers as the St. Mary's river, Guysboro county, the Margaree river in Inverness county, the Medway river and the Mersey river in Queens county, the Annapolis river, Annapolis county, and various other rivers and streams throughout the province. The record salmon taken by an angler was caught on the Margaree river and weighed 52½ pounds.

Trout fishing was particularly good. In Cape Breton island as well as the mainland excellent catches were taken. A trout landed with the fly at the outlet of Barachois river, St. Ann's weighed six pounds four ounces. Nova Scotia should be and is, becoming a popular and prosperous sport fishing district.

While the average visitor is contented with fishing for trout a great many visitors came to angle for salmon.

A great deal of time and energy was expended in an effort to keep our rivers and streams free of obstructions, etc., in order that such fish as salmon and trout may readily ascend to their spawning grounds, as it is recognized by all interested that it is of vital concern to the province that these fisheries be kept up if we are to hold the reputation which Nova Scotia possesses at present as a sporting country. Fishways were constructed in dams and various obstructions removed from the rivers and streams. Both salmon and trout fry were planted in the various waters.

## UTILIZATION OF FISH WASTE MANUFACTURE OF BY-PRODUCTS

During the year four licensed reduction plants were operated in Eastern Nova Scotia as shown below:—

Fasterfat, Ltd., Halifax.

C. W. Kendall Reduction Works and Fish Meal Plant, Halifax.

Lucky Fish Meal Co., Halifax.

Robinson Glue Co., Canso.

Fasterfat, Ltd. installed a modern machine for the manufacture of fish meal and has been working steadily throughout the year.

C. W. Kendall plant has been working part time on a smaller scale than Fasterfat.

The Lucky Fish Meal Co. was formed in February, absorbing the Kendall plant but only operated a short time when it became disorganized and Mr. Kendall resumed his own operations.

The Robinson Glue Co. operated as usual throughout the year.

The following plants were also operated in Western Nova Scotia:—

H. R. L. Bill, Lockeport, N.S.

A. W. Dodd Co., Tiverton.

A. W. Dodd Co., Westport.

Liverpool Refiners, Liverpool (east side).

Roy Casey, Victoria Beach.

Parkhurst Cod Liver Oil Corp., Tiverton.

M. A. Nickerson, Clark's Harbour.

George W. Wightmen, Lockeport.

Lewis Canning Co., Annapolis.

All of the above were engaged in the production of oil with the exception of the Lewis Canning Co. This plant was operated from a by-product standpoint for the purpose of grinding scallop and clam shells into chicken food.

## ROYAL COMMISSION ON FISHERIES

A Royal Commission to investigate the fisheries of the Maritime Provinces and the Magdalen Islands was appointed by Order in Council in September. This commission held meetings in Nova Scotia during the months of October, November and December. Sittings were held at Cheticamp, Port Hood, Canso, Isaac's Harbour, Arichat, St. Peters, Ingonish, North Sydney, Louisburg, Glace Bay, Mulgrave, Antigonish, Pictou, Pugwash, Halifax, Lunenburg, Liverpool, Lockeport, Shelburne, Barrington Passage, Clark's Harbour, Yarmouth and Digby.

The sittings were largely attended by the fishermen and others interested in the fishery industry.

## FISHERIES PATROL SERVICE

Patrol boat *Mildred McColl*, Captain Williams.—The Fisheries Patrol Boat *Mildred McColl* was absent from the district during the great part of the fishing season on scallop investigation in Prince Edward Island and New Brunswick. Her absence resulted in an outbreak of illegal lobster fishing, particularly in Halifax county east. This section of the coast includes numerous islands and coves which provide good cover for illegal operations. These can only be properly protected by the constant attention of the patrol boat.

Contract boat *Lulu T* was chartered to protect the lobster fishing boundary at Port Philip, Cumberland county, from August to October. The protection was only fairly satisfactory, but it will never be adequate until a regular boat is provided.



*F.P. I*, Captain Baker.—This boat kept up a continuous patrol throughout the season between Pubnico and the head of the Bay of Fundy and gave entire satisfaction in so far as it was possible for one boat to do so. This district is largely frequented by tourists during the summer months who in many cases encourage people to illegally fish for lobsters. The inspector for the district states he does not believe the parties carrying on such illegal fishing are our real fishermen but that they are farmers and men who are not dependent on that fishery for an existence. In practically every case where men were convicted for illegal fishing they were not lobster fishermen but parties engaged in other lines of endeavour. Another boat should be put on in the Yarmouth district to assist in patrol work covered by *F.P. I*, as this district is altogether too large for one boat, if the fisheries are to receive adequate protection.

## FISHERIES CRUISER SERVICE

The past year was a strenuous one for both C.G.S. *Arras* and C.G.S. *Arleux*. Both vessels were actively engaged throughout the year and both Captain Barkhouse of the *Arras* and Captain Cousins of the *Arleux* deserve commendation for the zeal and vigilance which characterized their work.

The *Arras* was engaged during the summer months as a hospital ship with the fleet on the Grand Banks and during the remainder of the year was occupied in patrolling the coast and ice breaking. The *Arleux* performed extremely valuable work throughout the year on fisheries patrol service and in assisting vessels in distress, breaking ice, etc.

With regard to the work of the *Arras* as a hospital ship the medical officer employed on the vessel reports as follows:—

The total number of new cases treated was 223, an increase of 37 over the preceding year.

The total number of calls upon the ship's medical officer for treatment, supplies and dressings were 312.

A larger quantity of stock drugs was dispensed but not so much of the special medicines.

The instruments were all oiled and placed in the sterilizer which with the remaining drugs and supplies were left in the care of the commander of the ship.

I believe more and more the fishing fleet are regarding the government ships as an intimate and integral part of their equipment. They trust us more with regard to their catches, each year increasing calls are being made upon our services and I can only emphasize again the advisability of sending a more suitable ship to the Grand Bank's service, a ship equipped with some form of hospital and surgical accommodation, a motor boat for getting quickly around the fleet in harbours, and facilities for exchanging courtesies between the government ships of foreign countries which we encounter in our work.

A digest of the logs of these two vessels will reveal the nature of the work performed and show an outstanding record of efficiency.

*Cruiser "Arras"—Captain Barkhouse*

The *Arras* commissioned at Yarmouth on April 1, 1927, was at that date undergoing her annual refit, the work being completed on April 20.

April 20. Proceeded to sea cruising east, called at Shelburne and arrived at Liverpool the 21st.

April 25. Left Liverpool cruising east and arriving at Halifax.

April 26. Taking stores and painting ship.

April 27. Proceeded to adjust ship's compasses.

April 29. Left Halifax cruising west, called at Lunenburg, and arrived at Liverpool the 30th.

May 2 and 3. Searching for drifting buoy off Little Hope and Roseway bank.

May 4. Cruising west, arriving at Shelburne same day.

May 5. Left Shelburne cruising east, calling at Lockeport and Lunenburg, arriving at Liverpool, May 6.

May 7. Assisted the 4-mast schooner *Joan Kielberg* out over Liverpool Bar to sea.

May 9. Assisted the 4-mast schooner *Cashier* to wharf at Brooklyn, then searched and found drifting bell buoy 18 miles off Liverpool. Towed buoy in and delivered to the C.G.S. *Lady Laurier*.

May 10. Cruising east arriving at Lunenburg same day.

May 11. Cruising west arriving at Liverpool.

May 12. Assisted the 4-mast schooner *Cashier* from wharf at Brooklyn to McClearns wharf, Liverpool.

May 13 to 16. At Liverpool. Dense fog on coast.

May 17. Assisted the 3-mast schooner *Cape LaHave* out over Liverpool Bar to sea.

May 18. Cruising west calling at Lockeport and arriving at Shelburne the 19th.

May 20. Cruising east. Assisted the salt laden 3-mast schooner *General Pau* to sea from Sandy point. Arrived at Liverpool same day.

May 21. Assisted the 4-mast schooner *Cashier* out over Liverpool Bar to sea.

May 23. Proceeded on patrol duty. First American mackerel seiner arrived on coast, followed her to Liverpool.

May 24 and 25. At Liverpool. Dense fog on coast.

May 25. First mackerel taken in nets on coast. These were taken at Yarmouth and Dover, N.S.

May 26. Calibrating the Direction Finding Station at Yarmouth, N.S.

May 28. Cruising east watching American mackerel seiners, arriving at Lunenburg the 30th with two mackerel seiners.

June 1 and 2. With American seiners. Arrived at Liverpool, June 2.

June 3. Cruising east, arriving at Halifax, June 4.

June 5 and 6. At Halifax taking in stores and new chain cable.

June 7. Cruising west calling at Lunenburg and Liverpool, arriving at Yarmouth, June 10.

June 11. Cruising east calling at Shelburne, arriving at Liverpool the 12th.

June 13. Hauled ship out on Marine Railway at Liverpool for overhaul underwater fittings and painting bottom.

June 16. Launched ship off Marine Railway and to wharf at Liverpool.

June 17. Cruising east, called at Lunenburg and arrived at Halifax on June 18.

June 19 to 22. At Halifax taking stores and getting ready to proceed to Newfoundland waters with the Canadian fishing fleet.

June 23. Cruising east towards banks.

June 24. At North Sydney. Coaled ship and proceeded at midnight towards St. Pierre and Green banks.

June 26. Arrived at Cape Broyle, Newfoundland, with part of the fishing fleet, to get in touch with the fleet on banks.

June 27 to August 30. The ship was in close touch with the fishing fleet on banks and in harbours when seeking bait, giving medical treatment to all sick fishermen and taking very serious cases to hospital at St. John's for treatment. During the season we gave treatment to 223 men on the vessels.

August 30. All fishing vessels were leaving for the western banks and towards home. We followed the fleet and arrived at North Sydney, 5.20 p.m. the 31st.

September 1. Proceeding towards Sable Island banks to search for four missing Lunenburg fishing vessels. Called at Canso and interviewed all fishing vessels sighted on banks and coast.

September 10. Arrived at Liverpool and Lunenburg to interview fishing captains that had returned from Sable Island banks.

September 12. Cruised towards Sable Island banks searching for missing fishing vessels.

September 14. Found the Grenfel Mission yacht *Maraval* at sea 22 miles off Canso, towed her to Canso and gave her in charge of customs officer.

September 16. Arrived at Lunenburg to embark six Lunenburg fishing captains and take them to Sable island to try and identify the wreckage found on island.

September 17. Proceeded and arrived at Sable island 9 a.m. the 18th. The six captains landed and remained six hours searching over the beach and around shores on the island. At 3 p.m. captains returned and we proceeded towards Lunenburg.

September 19. Arrived at Halifax to land sick lightkeeper from Sable island. Left Halifax and arrived at Lunenburg same day.

September 20 to 22. At Lunenburg. Dense fog on coast and banks.

September 23. Proceeded towards Sable Island banks searching for wreckage.

September 25. At 6.30 a.m. we found the Lunenburg schooner *Uda R. Corkum* sunk in 15 fathoms water on Middle bank. We pulled the topmast, main gaff and main boom and part of mainsail from the wreck and took into Lunenburg.

September 27. Arrived at Lunenburg and gave wreckage in charge of the customs officer.

September 28 and 29. At Bridgewater.

September 30. Proceeded to assist schooner *Manuata*, ashore at Gaff point, mouth of LaHave river.

October 1. Pulled schooner *Manuata* off rocks. Vessel filled with water and turned over on side. Towed her in river.

October 2. At Liverpool.

October 3 and 4. At LaHave assisting with sunken schooner *Manuata* to get her out of channel clear of shipping.

October 5 to 8. Cruising on western coast watching American mackerel seiners. Three seiners on our coast.

October 9. Attended memorial service for lost fishermen at Lunenburg. Arrived at Liverpool same day.

October 10 to 20. Ship at Liverpool blowing down and cleaning boiler and tanks.

October 21. Proceeded cruising east towards North Bay and the Northumberland Straits. Called at Lunenburg, Halifax, White Head, Port Hawkesbury, Souris, Prince Edward Island, arriving at Pictou October 29.

October 31. Left Pictou cruising towards south coast of Nova Scotia. Called at Souris, Canso, White Head, arriving at Halifax, November 3.

November 5. Cruising on western coast and at Liverpool, November 11.

November 12. Proceeded on station and arrived at Lunenburg to help pull new fishing schooner from launchways where she had broken down 11.10 p.m. Pulled schooner clear of launchways.

November 13. Cruising on western station.

November 16. Found the American fishing schooner *Virginia* in distress off Little Hope and towed her to Liverpool for repairs.

November 17. Cruising on station, calling at Lunenburg, Lockeport, and Shelburne.



November 23. Found mast showing 6 feet out of water and fast to sunken wreck off Mouton island. We pulled mast from wreck and towed to Liverpool and gave in charge of customs officer.

November 24. Cruising on station.

November 30. Assisted schooner *Vivian P. Smith* to wharf at Shelburne.

December 2. Cruising on station. Found Shelburne fishing schooner *Muir* in distress with broken shaft and assisted her to Marine Railway at Liverpool.

December 3. Cruising on western station.

December 17. Towed schooner *Hazel L. Myra* out of mud to safe berth at West LaHave, then cleared ice from LaHave river up to Bridgewater and assisted three-mast schooner *Harry McLellan* out the river to safe anchorage off West LaHave.

December 18. Assisted three-mast schooner *Hazel L. Myra* from LaHave to Lunenburg and arrived at Liverpool same day.

December 19 and 20. Assisted local tugs to pull the American fishing schooner off Liverpool bar, but failed, and vessel wrecked.

December 21. Cruising on station. Called at Lunenburg and assisted three-mast schooner *Hazel L. Myra* to Halifax. Then arranged to take doctor to Sable island to attend sick lightkeeper. Doctor Byrne refused to go in *Arras* as the accommodation did not suit him.

December 22. Cruising west towards LaHave river to clear ice and keep river open for shipping.

December 23. Broke ice and assisted the American four-mast schooner *Dustin G. Cressey* down river to safe anchorage off LaHave.

December 24. Cruising on station.

December 25 and 26. At Liverpool.

December 27. Cruising on western station, calling at Lunenburg, Liverpool, and Shelburne.

January 6. Assisted National Defence lighter *Sapper* from Shelburne to Halifax.

January 7 to 9. At Halifax taking stores.

January 10. Cruising on station between Halifax and Shelburne.

January 12. Assisted fishing schooners *Agnes McGlashen*, *Mona Maria*, and *Clara B. Creaser* along the coast from Sambro to LaHave.

January 13. Cruising on western station and arrived Halifax.

January 16. Assisting fishing vessels.

January 18. Assisting fishing schooners *Hamona* and *Delawana* from Sambro light to LaHave and Lunenburg.

January 19. Breaking ice in LaHave river and assisting schooners *Evelyn Wilkie* and *Kathleen Creaser* into safe berth clear of ice.

January 21. Breaking ice and clearing channel to Bridgewater and assisting four-mast schooner *Joan Kielberg* from wharf at Bridgewater down river through ice to safe berth off West LaHave.

January 22. At Liverpool.

January 23. Cruising east, arriving at Halifax same day.

January 24. Proceeded, assisting fishing schooners *Pauline Lhones* and *Democracy* from Sambro to Lunenburg and Riverport.

January 27. Arrived West LaHave.

January 28. Pulled the schooners *Golden West II* and *Village Queen* off the mud banks at Parks Cove, where they had been driven on shore during the gale of the 25th.

January 30. Cruising on station and searching for drifting light and bell buoy which had gone adrift from Brazil rock, 11.55 p.m. Found buoy 15 miles south by west from Little Hope. Took buoy in tow and arrived at Sandy point

5 a.m. 31st. We then started breaking ice and clearing ice from channel at Shelburne.

February 1. Proceeded breaking ice at Shelburne, found the can buoy off Sandy point light drifting to sea, towed it back to position, then proceeded breaking ice.

February 2. Cruised east and arrived at Riverport. Breaking ice and assisting fishing vessels at Riverport.

February 3. Breaking ice at LaHave, Parks Cove, and Riverport. Cleared channel to Ritcey's wharf and released fishing steamer.

February 4. Breaking ice at Riverport, released schooners *Mary Pauline* and *Audry Brown* from ice to safe anchorage.

February 5. Cruised to Mahone bay and started breaking ice to clear channel to shipyards at Mahone.

February 6. Breaking ice at Mahone bay and Lunenburg.

February 7. Breaking ice at Mahone, Lunenburg, and Riverport. We released four-mast schooner *Joan Kielberg* from ice to berth off Spectacle island clear of running ice, then cruised west, arriving at Shelburne February 8.

February 9. Cruising east, called at Liverpool and arrived at Lunenburg the 10th.

February 11. Cruised to Mahone bay, cleared channel of ice and arrived at Liverpool same day.

February 13. Cruised east, breaking ice at Riverport and Parks cove. Released schooner *Versailles* from ice and assisted her to Lunenburg.

February 14. Cruised to Mahone bay, broke ice, cleared channel to shipyards and returned to Lunenburg same day.

February 15 and 16. At Lunenburg.

February 17. Cruising west, calling at Liverpool and arriving at Shelburne the 22nd.

February 23. Pulled the stranded yacht *Mic-Mac* off ledge and to wharf clear of ice.

February 24. Cruised east and anchored off LaHave river at night, waiting for high tide.

February 25. Proceeded, breaking ice at Riverport, Parks cove, and LaHave, arriving at Liverpool same day.

February 27. Cruised east, breaking ice at Riverport and Parks cove. Released fishing schooner *Jennie Elizabeth* from ice and assisted her to Lunenburg.

February 28. Cruised to shipyards, broke ice and cleared the channel so new fishing schooner could be launched, then proceeded to Riverport, breaking ice and clearing channel. Released fishing schooner *Bertha Walters* from ice and to LaHave.

February 29. Proceeded breaking ice at Riverport. Released schooner *Hamona* from ice and to wharf at Riverport. Assisted fishing schooner to Lunenburg, then assisted schooner *D. D. McKenzie* from Lunenburg to ice channel, Mahone bay. Broke ice to wharf and shipyards and assisted *McKenzie* to Ernest wharf, Mahone.

March 1. Proceeded breaking ice at Mahone, then cruised west to Riverport, breaking ice and clearing channel. Released fishing schooners *Mona Maria* and *Clara B. Creaser* from ice and to wharf at Riverport.

March 2. Breaking ice at Parks cove and Riverport. Released the fishing schooners *Agnes G. Myra* and *Mark Grey* from ice and to wharf at Riverport. Released fishing schooner *Hermada* from ice at Parks cove and released fishing schooner *Neva Belle* from ice to wharf at Indian Point, then breaking ice at Mahone bay.

March 3. Proceeded breaking ice Mahone. Towed schooner *D. D. McKenzie* out ice channel clear of running ice, then cruised to Parks cove breaking ice. Released fishing schooner *J. E. Conrad* from ice to wharf at LaHave. Arrived at Liverpool same day.

March 4 and 5. At Liverpool. Gales on coast.

March 6. Proceeded, assisted schooner *Cape Blomidon* out Liverpool bay clear of ice, and to sea. Cruised east, breaking ice at Riverport and Parks cove, arriving at Mahone bay same night.

March 7. Proceeded breaking ice at Mahone bay. Assisted schooner *D. D. McKenzie* to sea, then cruised to Riverport breaking ice and clearing channel so coastal steamer with frozen bait could get to Ritcey's wharf to supply fishing vessels. At LaHave at night.

March 8. Proceeded breaking ice at Riverport. Released fishing schooners *Mary Pauline* and *Pauline Lohnes* and to wharf, then proceeded to Parks cove. Released fishing schooner *Bernice Zinck* from ice and assisted her to Lunenburg.

March 9. Proceeded to Indian Point breaking ice. Released schooner *Neva Belle* and assisted her to Lunenburg, then proceeded to Riverport, Parks cove and LaHave breaking ice. Released fishing schooner *J. E. Conrad* and assisted her to Lunenburg, then proceeded to Parks cove and LaHave.

March 10. Proceeded to Riverport breaking ice. Released the fishing schooners *Mark Grey*, *Mona Maria*, *Agnes G. Myra* and *Clara B. Creaser* from wharf and out in harbour clear of ice. Released schooner *Russel Zinck* from ice, then proceeded to Mahone bay breaking ice and clearing channel.

March 11. Breaking ice at Mahone bay.

March 12. Proceeded breaking ice at Mahone. Released fishing schooner *A. J. Balfour* from ice and assisted her to Lunenburg.

March 13. At Lunenburg.

March 14. Proceeded to Mahone bay breaking ice and clearing the channel to shipyards.

March 15. Breaking ice. New pilot boat launched, then proceeded to Indian Point breaking ice and clearing channel, arriving at Lunenburg same night.

March 16. Proceeded to East LaHave breaking ice and clearing channel to wharf, then breaking ice in LaHave river.

March 17. Proceeded breaking ice and opening up LaHave river for shipping. Cleared channel to shipyards at Dayspring and channel to Bridgewater, then cruised west arriving at Liverpool same night.

March 18, 19 and 20. At Liverpool. Heavy gales on coast.

March 21. Proceeded to sea cruising towards Yarmouth for ship to lay up for repairs as per telegram received from department. Arrived at Yarmouth same night.

March 22. Moored ship at Baker's wharf for refit.

March 23. Inspectors O'Brien and Stevens on board going over the defects that require attention.

March 24. Crew getting ship ready for repairs.

The Lunenburg Grand Banks fishing fleet consisted of 68 sail, French fishing fleet 150 sail, Newfoundland fleet 27 sail, and Portuguese fleet 20 sail.

Forty-two French beam trawlers, two Spanish trawlers and nine Canadian beam trawlers were sighted this year on the banks, that is, St. Pierre, Quero and Middle Ground banks. We had no beam trawlers to contend with on the Grand banks this year.

The Lunenburg fleet had only a fair catch this year. During the first part of August fish were very scarce on the Grand banks which caused quite a number of our vessels going west to the Sable island and Middle Ground banks.



We had no complaints of interference with our fleet by the beam trawlers, and very few reports of illegal fishing.

During the year we had 16 American fishing vessels on the stations we were working on, these we boarded twenty-four times.

During the year we steamed 15,293 miles and consumed 1,285 tons of coal.

*Cruiser "Arleux"—Captain Cousins*

April 1. Cruising westward towards Liverpool on patrol work. Fishing reported poor.

April 2. Arrived at Shelburne.

April 4. Proceeded to Yarmouth. Boarded several American lobster buyers. Local fishing vessels report fair catches being taken.

April 5. Proceeded up Bay of Fundy to Digby. Passed large fleet of lobster fishing boats between Yarmouth and cape St. Mary's. Fishermen report fishing very good, between Gulliver's cove and Digby gut passed large fleet of scallop boats operating. Fishermen report good scallop fishing.

April 11. Proceeding towards Browns bank to take up search for twelve men adrift in four dories from the American fishing schooner *Commonwealth* burned at sea.

April 12. Searching Browns and LaHave banks for missing fishermen. Spoke with several fishing vessels on banks. No trace of missing men in dories. Continued search until midnight when weather prevented any further search then proceeded towards coast.

April 14. Arrived at Shelburne.

April 15. Proceeded to Halifax.

April 20. Proceeded to Lunenburg.

April 21. Moored ship at Lunenburg for annual repairs.

June 10. Finished repairs.

June 11. Proceeded to Halifax for bunker coal and supplies.

June 17. Proceeded on patrol work, arriving at Lunenburg.

June 19. Proceeded to LaHave banks in search of two missing fishermen from the Liverpool fishing schooner.

June 20. Continued search towards cape Sable. 7.30 p.m. arrived at Shelburne. Reported fishermen picked up and landed at Portland, Maine.

June 24. Proceeded to Halifax for supplies.

June 29. Arrived at Canso.

July 1. At Canso taking part in Diamond Jubilee celebration.

July 4. Arrived at Sheet harbour.

July 5. Proceeded to Halifax.

July 9. Proceeded to Lunenburg.

July 12. Proceeded to Chester.

July 13. Patrolling in Mahone bay in search of illegal lobster fishing.

July 15. Patrolling in St. Margaret's bay, arriving at Halifax.

July 18. Proceeded to sea, took crew off schooner *Mary F. Anderson* and towed derelict to Halifax.

July 26. Patrolling off Halifax harbour in search of illegal lobster fishing.

July 27. Proceeded to Chester.

July 29. Arrived at Lunenburg.

July 30. Proceeded to Liverpool. Fishing reported fair.

August 2. Arrived at Shelburne. Local fishing boats taking herring.

August 3. Proceeded to Yarmouth. Boarded the American fishing schooner *Yankee*.

August 4. Calibrating the Yarmouth D. F. Station.

August 5. Calibrating station.

- August 6. Proceeded to Bay of Fundy towards Digby.
- August 10. Located new scallop bed 14 miles N.N.W. from Point Prim, Digby.
- August 12. Proceeded to Yarmouth.
- August 13. Arrived at Shelburne. Boarded American fishing schooner *Oretha F. Spinney*.
- August 16. Patrolling 3 mile limit off Shelburne to prevent American fishing vessels from securing bait inside limits. Local fishing boats taking good catches of herring from nets, disposing their catches to the Shelburne cold storage.
- August 17. Patrolling off Shelburne.
- August 18. Proceeding towards Halifax for coal and supplies.
- August 20. Relieved lightship No. 24 off Halifax. 8 p.m. relieved by lightship and proceeded to Halifax.
- August 26. Arrived at Shelburne.
- August 27. Patrolling off Shelburne, boarded several American sword-fishermen at Shelburne.
- August 30. Patrolling in vicinity of Shelburne.
- September 1 to September 3. At Shelburne. Thick fog. Boarded several American fishing vessels.
- September 5. At Lockeport (Labour Day) taking part in celebration.
- September 6. Proceeded to Sandy point, took schooner *Joan Kielberg*, which was damaged in gale August 24, in tow for LaHave river.
- September 7. Moored schooner at LaHave river, and proceeded to Lunenburg.
- September 8. Cruising towards Halifax.
- September 13. Proceeded to St. Margaret's bay and Hubbards cove, and proceeded to Lunenburg.
- September 15. Proceeded in search of illegal lobster fishing.
- September 16. Arrived at Shelburne. Boarded several American fishing vessels.
- September 17. Arrived at Halifax.
- September 19 to September 24. Cruising in vicinity of Halifax.
- September 26. Cruising towards St. Margaret's Bay and Hubbards Cove. Proceeded to Halifax.
- September 28. Arrived at Lunenburg.
- September 29. Proceeding towards Sable island to bring off the late light-keeper's family and sick man.
- September 30 to October 2. Off Sable island. Crew of life saving station made several attempts to launch surf boat, sea too rough.
- October 3. Proceeded for coal. Towed into Canso water logged schooner *N. W. White*. Proceeded towards Sable island.
- October 4. Arrived at Sable island, took off Cleary family and sick man, proceeded towards Halifax. Strong S.W. gale.
- October 5. Arrived at Halifax.
- October 6. Proceeded to St. Margaret's bay and Hubbards cove.
- October 7. Proceeded to S.W. island, assisting patrol boat *Mildred McColl* in locating position of fish trap. Proceeded to Lunenburg.
- October 9. At Lunenburg. Officers and crew attending memorial service for the fishermen lost during the gale of August 24th.
- October 10. Proceeded to Halifax and vicinity.
- October 15. Arrived at Lunenburg.
- October 17. Proceeded in search of illegal lobster fishing.
- October 18. Boarded American seiner *Governor Foss*, at Lunenburg.
- October 21. Arrived at Halifax, cleaning ship's boiler.

November 1. Proceeded to Lunenburg.

November 2 and 3. Proceeded in search of illegal lobster fishing, proceeding to Lunenburg.

November 8. Arrived at Shelburne.

November 9. Cruising towards Yarmouth.

November 10. Calibrating Yarmouth D. F. Station.

November 11. Proceeding up Bay of Fundy towards Digby, passed large fleet of scallop boats operating between Gulliver's cove and Digby gut. Fishermen report good scallop fishing when weather is favourable. Several new boats have been added to the fleet this season. Proceeded to Digby.

November 12. Proceeded to sea, picked up motor boat with two men, broken down and drifting to sea. S.W. gale. Took boat in tow to Digby. Ship at Digby in protection to scallop fleet, until lifeboat is in commission.

November 19. Proceeding towards Yarmouth.

November 20. Proceeded to Shelburne.

November 21. Arrived at Halifax for coal and supplies.

November 26. Proceeded to Sheet Harbour.

November 27. Proceeding towards Canso to protect the winter fishing fleet.

November 27 to January 24. Protecting winter fishing fleets from Canso, Arichat and Petit de Grat, and assisting fishing boats with engine trouble. Fishermen report poor season's fishing owing to haddock being scarce, and rough weather.

January 27. Proceeded towards Halifax.

January 28. Relieved *Sambro* lightship, and proceeded to Halifax.

February 2. Proceeded towards Lunenburg with new Lunenburg fishing schooner *Sigrid Amanda* in tow.

February 4. Moored ship at railway wharf Lunenburg for annual refit.

#### LOSS OF LIFE

The loss of life of those actively engaged in the fishing industry of this province I deeply regret to have to report was appalling. In addition to the eighty-two men of the Lunenburg fleet, previously referred to, who lost their lives during the big gale of August 24, when four vessels of that fleet failed to return to port, a number of shore fishermen as follows were drowned while engaged in their precarious calling:—

On April 24, R. Latter drowned at Herring cove, Halifax county.

On August 24, Arthur Covey and his son Charles, of Indian harbour, drowned off Prospect, Halifax county.

Two fishermen were drowned in Halifax county east.

Three fishermen of Petit de Grat were drowned during the month of November. The schooner *Virginia S* lost one man on November 22, when Mr. Alexie Martell was washed overboard from a dory by a heavy sea. On the 28th. Messrs. Edward DeRoche and Willie Brown lost their lives when returning from the fishing grounds. A heavy sea capsized their boat and although they clung to the bottom of the boat as long as possible and several of their friends attempted to save them they sank before they could be rescued.

#### PROSECUTIONS

In Appendix No. 8 will be found details of prosecutions for offences committed against the Fisheries Act in this province.



# REPORT OF INSPECTOR J. F. CALDER, DISTRICT No. 1, NEW BRUNSWICK, FOR 1927-28

District No. 1, New Brunswick, comprises the counties of Charlotte, St. John, Albert and the Bay of Fundy watershed of Westmorland county.

The following statement shows the catches and values marketed for the past year:—

Cod.....	19,331 cwt.	Value.....	\$ 58,247
Haddock.....	32,735 "	" .....	70,589
Hake.....	36,796 "	" .....	41,610
Pollock.....	7,693 "	" .....	14,272
Halibut.....	101 "	" .....	1,912
Flounders.....	1,133 "	" .....	3,747
Skate.....	157 "	" .....	431
Herring.....	155,224 "	" .....	186,023
Sardines.....	174,640 bbls.	" .....	1,046,250
Alewives.....	23,000 cwt.	" .....	41,916
Salmon.....	3,462 "	" .....	66,492
Shad.....	1,698 "	" .....	18,600
Smelts.....	194 "	" .....	1,903
Mixed Fish.....	205 "	" .....	102
Clams.....	24,493 bbls.	" .....	96,599
Cockles.....	143 cwt.	" .....	500
Green Dulse.....	2,870 "	" .....	7,040
Lobsters.....	6,735 "	" .....	194,425
Winkles.....	520 "	" .....	1,231

The total marketed value of the catch was \$1,858,364, against \$2,296,541 for 1926, \$1,859,003 for 1925 and \$2,030,611 for 1924.

## COD

The catch of cod was 19,331 cwt. against 37,674 cwt. for the previous year. Cod were not so plentiful during the past year as they were the previous one, the demand for the fish was very poor and the opportunity to sell did not always exist. These factors account for a considerable portion of the decrease in the catch.

## HADDOCK

A large increase is to be noted in the quantity of haddock taken during the year—32,735 cwt. against 19,061 cwt. for the previous year. The increase in the haddock catch is due to two causes: first, the lack of market and very low price being paid for hake, and the increased opportunity to sell haddock in a fresh condition, the Maritime Fish Company of Digby, N.S., taking regular cargoes from Wilson's Beach.

## HAKE

The catch of hake was 36,796 cwt. against 34,120 cwt. for the previous year. The market conditions for these fish remain practically as they were during 1926. The average price paid during the past year for the round fish was 46 cents per cwt. This price was so low that very little energy was put into the fishery.

## POLLOCK

A large decrease is to be noted in the pollock catch—7,693 cwt. against 38,271 cwt. for the previous year. This falling-off in the yield is due entirely to a scarcity of the fish. Pollock were very scarce along the whole Atlantic seaboard. This was a serious blow to our fishermen, as slack-salted Quoddy pollock were generally in good demand, at fair prices. Of course, the price paid this year, due to the scarcity of the supply, was very high.

## HERRING

There was a falling-off of about 50 per cent in the herring catch for the year as compared with the previous one—155,224 cwt. in 1927 against 229,611 cwt. in 1926. This was due, principally, to a great falling-off in the run of herring at Grand Manan. The limited supply, however, was really a blessing in disguise for all those who engage in the smoked herring industry at Grand Manan, as their smoke houses were filled with the pack of the previous year. Owing to the very light pack during the past year, they were enabled to dispose of the stock on hand at fair prices.

## SARDINES

One hundred and seventy-four thousand six hundred and forty barrels were taken during the past year, against 171,637 barrels in 1926—practically the same quantity in each year—but the available supply differed greatly during the two years in question. During 1926 thousands of hogsheads of sardines were actually turned out of the weirs, as there was no sale for them. The factories on the American side actually closed down for the year by the middle of October. This year they kept open until the first of December. It is true that they did not open until July this year, but such was the case with most of them during 1926. Until July of the past year, Connors Bros. Ltd., was the only cannery that was open. Of course there were times when they could not take care of the entire supply, but the run was not very heavy and most of the fish were sold. After the American canneries opened up, the demand always exceeded the supply. The catch for the present year, therefore, really represents the available supply. The average price paid to the fishermen, \$6.60 per hogshead, is not a fair value for the product, and the industry is being conducted, on the whole, with very little, if any, profit. For the greater part of the year, the canners acted as an actual combine in the purchase of sardine herring supplies, with all of them paying \$5 per hogshead; but, during the latter part of the year, as the supply continued to be light and the buyers of lobster bait from Nova Scotia were procuring considerable quantities at the standing price, the canners started to raise it, with the result that, for a time, there was active competition among them in the purchase of herring at the weirs, and good prices were paid to the fishermen. The pack last year was comparatively light, all old goods are cleaned up and the past years pack is practically all disposed of also. Consequently, the canneries will all open in the spring, and it is to be sincerely hoped that there will be competition among them in the purchase of their supply of sardine herring, and that our fishermen will once again receive fair prices for the same.

## SALMON

The salmon catch was 3,462 cwt. against 3,810 cwt. for the previous year—a slight falling-off. Taken on the whole, however, this fishery is well holding its own.

## ALEWIVES

The Alewife catch was 23,000 cwt. against 34,000 cwt. for the previous year. A large portion of the alewife catch is salted, packed in barrels and exported to Haiti and other West Indian islands. There is very little demand for them at the present time, with the result that a considerable portion of the catch is yet on hand. The prospects for the successful prosecution of this branch, during the coming year, is not very encouraging.

## SHAD

There was a large falling-off in the shad catch for the present year—1,698 cwt. against 3,384 cwt. for 1926. While the catch in the Bay of Fundy

waters and St. John harbour was very light, at the same time, Overseer Barnes reports that a very large run of shad ascended the Petitcodiac river and successfully performed their function of propagation. It is to be hoped that the fishery will show the benefit of the same in the course of the next few years.

#### LOBSTERS

A slight increase is to be noted in the quantity of lobsters taken during the year—6,735 cwt. against 6,130 cwt. for 1926. I really think the increase in the yield is due more to favourable weather conditions during the past fall, rather than to any increase in the run of lobsters.

There is very little to note with regard to minor branches of the industry.

It is very apparent that the lot of the fisherman, under present conditions, is not a happy one. The run of fish, taken on the whole, is fairly satisfactory, and the fishermen have provided themselves with necessary, up-to-date equipment for catching the same; but they are seriously handicapped by their inability to find a ready market for their products at paying prices. This is especially true of the summer months when the run of fish is the greatest and the weather is good. The urgent need of the line-fishermen is development of the fresh fish and mild-cured industries. The salt fish industry appears to be dying out. The fresh, mild-cured and canned industries are taking its place. Except in sardine canning, there has been very little development along these lines in this district. There is a fairly steady supply of practically all kinds of ground fish of the very best quality, but neither facilities, capital nor business organization for development along modern lines. It is to be sincerely hoped that some such development will materialize in the near future.

There were 64 confiscations and 14 prosecutions during the year. In Appendix No. 8 will be found full details of the prosecutions for this district.

#### REPORT OF INSPECTOR A. L. BARRY, DISTRICT NO. 2, NEW BRUNSWICK, FOR 1927-28

District No. 2, New Brunswick, comprises the counties of Westmorland (Northumberland strait side only), Kent, Northumberland (except the Northwest and Southwest Miramichi), Gloucester and Restigouche.

The total marketed value of the catch for the past year was \$2,504,560, as against a marketed value of \$2,998,007 for 1926, a decrease of \$473,281. The following tables show the catch and marketed value for the years 1926 and 1927:—

	1927		1926	
	Quantity	Value	Quantity	Value
Lobsters.....	43,017 cwt.	\$ 760,628	53,481 cwt.	\$ 921,856
Smelts.....	45,990 "	684,260	59,088 "	846,850
Salmon.....	18,369 "	331,112	20,779 "	320,322
Cod.....	117,442 "	223,159	160,890 "	386,273
Oysters.....	13,574 bbls.	100,576	12,383 bbls.	92,535
Tomcods.....	20,246 cwt.	91,979	17,079 cwt.	61,242
Herring.....	257,609 "	193,593	194,290 "	201,756
Clams and Quahaugs.....	8,704 bbls.	34,099	9,445 bbls.	35,644
Mackerel.....	9,271 cwt.	30,303	19,088 cwt.	65,188
Alewives.....	7,950 "	10,025	17,717 "	28,426
Hake and cusk.....	8,963 "	18,692	5,166 "	11,583
Haddock.....	1,099 "	2,335	1,996 "	3,800
Shad.....	688 "	6,530	1,313 "	9,071
Flounders.....	55 "	55	50 "	50
Scallops.....			315 bbls.	708
Mixed fish.....	528 cwt.	528	51 cwt.	51
Trout.....	172 "	3,998	137 "	2,040
Bass.....	482 "	9,338	426 "	6,590
Eels.....	32 "	300	119 "	894



## LOBSTERS

Of the fisheries of this district the lobsters still hold first place in value although there was a decrease of 10,000 cwt. from the previous year. I would attribute a great deal of this decrease to the fact that there was better protection against out of season fishing in the northern district where in past years considerable lobsters were taken and carried to the open season district to the south and included in the catch of the fall season. I look for a considerable falling off in the reported pack in the northern district this coming year. In past years, a considerable illegal fall pack was made in certain parts of the northern district and included in the spring pack for the following year but there was very little of this during the fall of 1927 owing mainly to better protection, the low price of lobsters and the refusal of the larger dealers to buy any of this illegal stock. There were 125 lobster canneries in operation as against 129 in the previous year, a decrease of four. This decrease took place in the southern district and for some years past there has been a steady decrease in the number of canneries operating, as the operators cannot obtain enough lobsters to make packing profitable. Another reason is the ready market for the sale of lobsters for the live lobster trade which pays a better price for the larger lobster than the canneries can afford.

## SMELTS

There was a decrease of 13,098 cwt. in the catch with a decrease in value of \$162,590 from the previous year. This decrease may be partly accounted for by the fact that until after Christmas 1927 there was very little fishing owing to the lack of ice rather than to any noticeable decrease in the run of smelts. The fishermen sustained some severe losses in nets and gear owing to the ice moving out on two or three occasions after they had set their nets. Altogether about \$10,000 worth of nets were destroyed. The quality of smelts was good, particularly in the fall of 1927, and a good average price was maintained.

For the past three or four years the fishermen of the Miramichi district have realized that the number of nets set to catch smelts is out of all proportion to the quantity of smelts taken, there being about 3,000 licenses issued on the Miramichi river and bay. Throughout the summer, at the request of the fishermen, some meetings were held at which they voted almost unanimously for an increase in the distance between nets. Commencing December 1, 1927, all nets in the Miramichi district were set 200 yards from each other up and down the river where previously they had fished as close as 100 yards. The results have proven quite satisfactory and saves the fisherman who has struck a good run of smelts from being hemmed in too closely by other fishermen, as was the case previously. Better protection was given the smelts previous to the opening of the season with the result that there was very little illegal fishing done.

Less gill-net fishing was carried on from October 15 to December 1 than ever before and the fishermen are beginning to realize that this is not a paying proposition, as the smelts command only about half the price that they do in the colder weather. Last year the fishermen of Buctouche bay and the tributary rivers asked to have gill-net fishing prohibited which request was granted by the department.

## SALMON

There was a decrease of 2,410 cwt. from the previous year with an increase in value of \$10,566. The decrease was general throughout the district among the trap-nets, although the catch by drift boats in Northumberland strait was

about equal to the previous year. There was a considerable falling off in Bay Chaleur and Restigouche districts where all fishing is done with trap-nets. The decrease may be accounted for by the general fluctuations in fisheries from year to year. Nearly one million pounds were shipped frozen to England. The United States market also was always quite brisk and there was always a good demand for salmon the fishermen receiving from 10 cents to 12 cents per pound.

#### COD

There was a decrease in the cod fishery the catch being 43,448 cwt. and the value \$163,114 less than the previous year. Altogether the cod fishermen had a hard year as the continued damp weather throughout the fishing season made it next to impossible to put up a well dried product with the result that the market value shows a considerable decrease. Owing to the poor price paid, many boats of the fishing fleet stayed in the harbour. The price paid for dried fish averaged \$1 per cwt. less than the year before. The overseer in the Caraquet area reported that about 60 per cent of the fish were graded No. 2 quality.

#### OYSTERS

There was an increase of 1,191 barrels with an increase in value of \$8,041 over the previous year. Most of this increase was in the Miramichi Bay district where an increased catch of 1,075 barrels were taken. The increase was mainly due to the increased number of fishermen who came to the Miramichi from as far north as Caraquet and as far south as Buctouche. Last summer all dealers in my district were notified by letter from this office that a stricter check would be kept on the quality of oysters which were being bought from the fishermen. The overseers notified the fishermen that the size limit was to be more strictly adhered to. The inspector received many letters from the dealers saying that they were most ready to co-operate in putting on the market a better grade of oysters and the fishermen themselves were pleased when they received from \$1.50 to \$2 per barrel more for selected oysters than they had received the previous year. There is a wonderful opportunity for the development of the oyster fishery in this district and it is hoped that as a result of the meetings of the Royal Commission that some steps will be taken to improve the beds already in existence and develop new areas suitable for oyster culture. At the Commission sittings nearly all the oyster dealers asked for compulsory grading and standard packing of oysters.

#### TOMCODS

There was an increase of 3,167 cwt. with an increase in value of \$30,737 over the previous year. In February of last year there was very keen competition among the buyers of tomcods and as high as \$2.25 per barrel was paid where previously this fishery brought only from \$1 to \$1.50 per barrel. This accounts for the increase in value.

#### HERRING

There was an increased catch of 63,319 cwt., but a decrease in value of \$8,163.

#### MACKEREL

There was a decrease in catch of 9,817 cwt., with a proportionate decrease in value of \$34,885. This was not due to any decrease in the run of fish. It is regrettable that more fishermen did not go into mackerel fishing last year as owing to the fact that the Gloucester fleet did not strike the schools there was a brisk demand in the United States for these fish. In 1926 and 1927 the dealers

in this district had large stocks on hand which they were barely able to get rid of, with the result that they made very little preparation for buying in 1927, and so missed a most favourable market.

## ALEWIVES

There was a decrease of 9,767 cwt. with a decrease in value of \$18,401.

## CLAMS AND QUAHAUGS

There was a decrease of 741 barrels and a decrease in value of \$1,545. There are now two canneries for canning quahaugs in my district, where a couple of years ago there were none. This probably accounts for the increase in value, although no apparent reason can be given for the decreased catch.

## TROUT

There was an increase in the reported commercial catch, also a great increase in the catch in angling waters. Anglers of the Miramichi and tributaries report that the trout fishing was the best for years. This they attribute to the better protection given by the department in the prevention of fishing for trout through the ice, considerable of which was done until two or three years ago, particularly in the Bartibogue and Tabusintac rivers.

## SCALLOPS

No scallop licenses were issued for this district last year. Good beds are known to exist in bay Chaleur, but as the fishermen are not familiar with the methods of taking this splendid shell fish and as they are hard to fish on account of living in deep water very little attempt is made to take them. It is hoped the commission will recommend instructions to the fishermen in the methods of raking scallops.

The other kinds of fish in my district are so unimportant that special mention need not be made of them.

## PROTECTION

We had better protection on all kinds of fish last year than at any time during the past three years. The fishermen themselves seem to realize that in fishing illegally or countenancing it they are working against their own interests. Dealers, too, have awakened to the fact that the lobster fishery was doomed unless energetic steps were taken to protect this. In last year's report I spoke of a meeting held in Moncton in February, 1927, as a result of which more co-operation was looked for between the dealers and the department's officers. This has proven to be the case. At that meeting the dealers bound themselves to buy no illegal lobsters either in a packed or green state, and so far as I know all who signed the agreement have lived up to it. It was particularly noticeable during the close season north of the Chockpish. Some parties were looking everywhere for cans with which to put up illegally caught lobsters. They could not get these from the large dealers as in years past, and this was one contributing cause of the better conditions in the northern district last year. Only in one section of the northern district was any great attempt made to fish for lobsters in spite of preventive measures. This was in the district of Kent county, north of the Chockpish. Two additional patrol boats were put under the charge of the overseer there and with the result that nearly 5,000 lobster traps were taken up and the attempt to fish had finally to be abandoned by the fishermen, some of whom have no gear with which to start this year. It is regrettable that all this gear must be destroyed, but under the circumstances nothing else can be



done with it. If the traps were brought ashore they would certainly be stolen and put back into the water again. A number of prosecutions took place for breach of the lobster regulations, which had the result of slowing up the activities of the illegal fishermen.

Fishing for salmon out of season has long been a favourite pastime on the Miramichi for years past, but last fall more energetic steps were taken to interfere with this traffic. Additional and better guardians were employed to assist the overseer and by keeping their boats on the go day and night, and by changing the guardians, practically every net that was put in the water was seized, and it was admitted on all sides that very few salmon were shipped to the American market as in former years.

The same patrol was used to protect the smelts before the opening date, December 1, with excellent results.

As a result of the strict measures put in force more co-operation has come from the fishermen themselves, a greater number of whom fish out of season only because their neighbours do.

One necessity in this district is a fast sea-going motor launch available for any part of the district during the open water and this is being asked for, for this year. The last few years there has been a scarcity of salmon in the trap-nets of the Miramichi river. This scarcity has been laid to the drift-net fishermen, rather unfairly I think, as the charges are made without any real study of the facts. Of course there is no question that if drift-nets were not used more salmon would come up the river, but I believe there are other contributory causes, one of which has been the taking of so many spawn salmon during the fall of the year, in years past.

However, as a result of an investigation carried out by the department among the drifters and trap-net fishermen, restrictive measures will be put in force this year which it is hoped will remedy conditions somewhat. Drifting will cease on the 31st of July, one month earlier than in years past. The length and depth of their nets will be limited, which was not done before, and the trap-net fishermen in the river are to give up fifteen days at the end of this season. If, as a result, no increase in salmon is shown within a reasonable time more restrictions will probably have to be put on.

I quite agree that in order to have a well-balanced situation more salmon must reach the angling pools in the spring and early summer, but I do not agree with those who agitate that to this end the drifters should cease fishing for two weeks in June, which is the only month in which their operations really pay.

#### SEALS

Throughout the summer there was a bounty of \$3.50 paid on hair seal noses. In addition to the amount appropriated by the department for these bounties, the fishermen of the Miramichi held meetings and requested that the salmon license fees from the Miramichi be used for the destruction of seals at the mouth of the Miramichi. Altogether I paid out about \$1,700, representing payment on nearly 500 seals. This would indicate the destruction of at least 1,000 seals, as only about 50 per cent of those actually killed are ever recovered. As a result there were fewer complaints about the seals last summer than for some years past, and it is hoped that the bounty will be continued.

#### LOBSTER CANNERIES

There is a steady improvement in the sanitary conditions and in the equipment used in the lobster canneries. Last summer one license was cancelled and the fee returned to the applicant as his cannery was not considered fit for use.

In another case the overseer was instructed to accept no application. In a number of others the owners were warned to carry out certain drastic measures for 1928, under penalty of being refused a license to pack.

Throughout the year there were 63 prosecutions as against 17 of the year before. There were also 131 confiscations as against 54 of the previous year. Prosecutions were for offences as follows:—

Breaches of lobster regulations.....	39
“ oyster “.....	4
“ salmon “.....	18
“ smelt “.....	2
Total.....	63

In appendix No. 8 will be found a list of those who were prosecuted in this district.

Considerable interest was taken by the fishermen and dealers in the sittings of the Royal Commission on Fisheries and as a result there is a more optimistic feeling that much good will come of the hearings. The fishermen all spoke well of the liberty they were given in expressing their views and the sympathetic hearing they received. They were frank in mentioning their faults in the past and in this way the commissioners got a real insight into the abuses by the fishermen themselves as well as the handicaps with which they have to contend.

#### REPORT OF INSPECTOR H. E. HARRISON, DISTRICT No. 3, PROVINCE OF NEW BRUNSWICK, FOR 1927-28

District No. 3, New Brunswick, comprises the counties of Kings, Queens, Sunbury, York, Carleton, Victoria, Madawaska and the tidal waters of the Northwest and Southwest Miramichi rivers in Northumberland county.

Spring opened up a little earlier than it did in 1926; the St. John river being pretty well clear of ice by April 20. By April 23 the waters of this river reached a height of about fifteen feet above low level, but did not reach the usual spring freshet level of about twenty feet above low level. The first gaspereau of the season reached the Fredericton market April 20. The weather continued cold and cloudy, with many rain storms, and the rivers and streams kept at a fairly high pitch nearly all season, and the season was not considered a favourable one from the fishermen's point of view, but it was of advantage to the earlier runs of fish such as gaspereau, shad and salmon. In comparing statistics for my district for the year 1927 with 1926 consideration must be given to the enlarged area in 1927. This added area comprises the tidal waters of the Northwest and Southwest Miramichi rivers and the tributaries entering them in that area—a considerable body of important water so far as the gaspereau, shad and salmon fisheries are concerned.

The total weight and value of the fisheries in 1926, excluding the area above referred to, and the total weight and value in the whole area in 1927 were as follows:—

Year	Cwt.	Marketed value
1926.....	2,936	\$30,930
1927.....	11,753	43,749

an enlargement of 8,817 cwt. and \$12,819 in value and the value of boats and gear added more than 100 per cent to the 1926 value.

Appropriate efforts were made to give the added territory proper supervision and I have no hesitation in saying that the local officer in that sub-district had proper respect shown in the matter of protection for the valuable fisheries.

Taking the 1926 area, and comparing the total catch and value in the same area in 1927, I find that there was a reduced catch of 265 cwt. and a less value of \$7,347, accounted for almost wholly in the smaller catches of bass and salmon.

## ALEWIVES

Fewer alewives by 98 cwt. were taken in 1927 in the same area that I had in 1926, consequently the large catch shown below was mostly taken in the Northwest and Southwest Miramichi rivers. The figures are

Year	Cwt.	Value
1926.....	758	\$2,274
1927.....	9,144	13,432

an increase of 8,386 cwt. and \$11,158.

In the St. John river area advices were to the effect that these fish were very plentiful during the spring run but the market was very limited therefore no particular effort was made to take more than were required for local consumption. In the Miramichi rivers area, i.e., the tidal waters, the quantity was 8,484 cwt. while statistics show that 9,000 cwt. were taken in the same area in 1926. I regret to have to report that the market for this fish was not good, and the price was low, and many hundreds of barrels remained in the hands of the dealers throughout the summer, with little or no profit to either fishermen or dealer.

## BASS

Year	Cwt.	Value
1926.....	220	\$3,888
1927.....	12	216

The bass fishery was almost a complete failure in 1927. In the St. John river area the drop was 200 cwt. and in the Miramichi rivers area none were taken in 1927. So far as the St. John river is concerned my experience is that there is a good run of bass about every twelfth year, but I had hopes for something more stable in the Miramichi area.

## EELS

Year	Cwt.	Value
1926.....	30	\$114
1927.....	125	500

While the price of this fish, to the fishermen was practically the same in both years, and was very low, there was a considerable increase in the quantity taken. Had the price kept as it was in 1925—17 cents per pound—it is possible that a much larger catch would have been taken in 1927, and the water rid to a greater extent of a pest.

## MULLET

Year	Cwt.	Value
1926.....	224	\$ 672
1927.....	255	1,005

This fish is used for baiting eel pots, to a considerable extent. There is also a considerable market for it in certain centres of population. Another reason why it seems desirable to take as many as possible from the rivers is the fact that it is presumed that it is very destructive to the eggs of shad and gaspereau, and possibly to the eggs of trout. A strange thing is the fact that trout and mullets appear to be great friends and very large fish of both species will lie together in considerable numbers in many clear water pools.

## PICKEREL

Year	Cwt.	Value
1926.....	368	\$4,416
1927.....	480	5,560



The very substantial increase in the catch of this fish is satisfactory, the fish were of large size and the price continued fairly satisfactory to the fishermen. It is a fishery that does not entail a large outlay for gear and it may be carried on the year round without the fishermen having to take much time from other work and it puts a few dollars into the pockets of the farmers living near waters where pickerel are fairly plentiful.

## SALMON

	Cwt.	To fishermen \$	As marketed \$
1926.....	552	13,800	13,800
1927.....	378	9,250	9,250
1927.....	633	13,075	16,900
1926.....	732		
1927.....	255	3,725	7,650

NOTE.—The first set of figures are for the district as it was in 1926, i.e., excluding the tidal waters of the Northwest and Southwest Miramichi rivers, and shows a decreased catch of 174 cwt. in 1927 and a value decrease of \$4,550. The centre row of figures show the quantity and value in my present area. In this instance the St. John river fish is credited at 25 cents per pound and the Miramichi rivers fish at 15 cents per pound to the fishermen and 30 cents per pound to the dealers. The lower set of figures show the catch in the two Miramichi rivers—the same area, see Inspector Barry's report for 1926—with a smaller catch of 477 cwt. in 1927. With regard to the St. John river I have no complaint to make. The water kept fairly high during the month of June and half of July and salmon evaded the gill nets on the lower part of the river but good catches were made higher up, in York and Carleton counties. While this fishery fell off greatly in the upper area during the balance of the netting season it improved in the lower area—Kings county—and, notwithstanding the many and bitter complaints regarding the lack of effort on the part of your officers and guardians to enforce the law, and the great destruction of salmon by poachers, I think that I shall be able, before my report is concluded, to show that at least a fair proportion of salmon reached the angling and spawning waters. The fish were exceedingly well developed and very few grilse were taken in the nets. I anticipate that the development of hydro at Grand Falls which work will be completed sometime this year will affect the salmon fishery of the St. John river above Fredericton. The river will be kept at a higher level, probably, after the spring freshet subsides, and this may hurt some fishing stands and help others, and it is possible that it may spoil the angling altogether, or again it may develop other salmon pools. It will take a year or two to know what the result will be, and it will be interesting to watch the matter. Coming to the Miramichi waters, it seems to me that there is real cause for worry. The 1925 report gives the nets' catch as 992 cwt., the 1926 report as 732 cwt. and the 1927 report as 235 cwt. for the tidal waters now under my jurisdiction, with a similar decrease in the trap-nets district of Inspector Barry's district. I understand, while the drift-nets have taken a larger amount than in 1926. As this matter has received some consideration by your department, and is being further considered by the Royal Fisheries Commission, it is hoped that a remedy for present conditions may be found. At the session of Commission referred to, I was extremely pleased to hear two trap-net fishermen, who were strangers to me, voluntarily recommended that the size of the mesh

for trap-nets be made five and one-half inches, by law, instead of five inches as at present. As the department is well aware, I have for years advocated a six-inch mesh for salmon nets, of all descriptions, in all of our waters, and at a session of the commission in St. John a few days later Commissioner Robichaud advised the commission that he is in favour of the six-inch mesh. Such, it appears to me, would permit a considerable number of fair sized fish—6 to 8 pounds—passing through the nets if the fish happened to strike them, and would in a measure appease the anglers in giving them more fish to have a try at. It seems difficult to limit the number of nets allowed but I think that it would not be difficult to limit the length of them. Very few small fish are taken by the salmon nets in the St. John river but a very large number have been in years past, and up to the present, in the trap-nets in the Miramichi rivers and bay. It seems quite apparent that drastic action of some sort must soon be taken if the valuable salmon fishery of the Miramichi district is to be preserved, and a good deal may be done by the strict enforcement of even the present regulations.

## SHAD

Year	Cwt.	Value
1926.....	720	\$4,320
1927.....	674	4,044
1927.....	1,017	5,108
1926.....	680	3,800
1927.....	343	1,064

NOTE.—The top figures are for my district as it was in 1926 (excluding the tidal waters of the Northwest and Southwest Miramichi rivers) and for the same area in 1927. It will be observed that there was a slight decrease in 1927. The middle row gives the result in 1927 with the Miramichi district added and the lower set gives the result in the Northwest and Southwest Miramichi rivers alone in 1926 and the same in 1927, showing a 50 per cent decrease in the latter case, with only thirteen shad fishery licenses issued in that area in 1926, as against seventy-nine in the same area in 1927.

An analysis of the St. John river area shows that the Kennebecasis river, in Kings county, yielded 72 cwt. less than the previous year and that the Washademoak water, in Queens county, yielded 113 cwt. more and the St. John river, in Queens county, yielded 96 cwt. less than in 1926; a net loss of 55 cwt. in the two counties. The balance of the St. John river counties—Sunbury, York, Carleton and Victoria—do not figure strongly in the total; the gross catch there in 1927 being 46 cwt., which just equals the net loss in the St. John river area in 1927 as compared with 1926. As the four counties—Sunbury, York, Carleton and Victoria—cover about 140 miles of the St. John river, it would appear that 46 cwt. of shad taken from that area would not tend to affect the shad fishery seriously, consequently if it desired to curtail this fishery further it would appear that the remedy needs to be applied in the counties of Kings and Queens, particularly on the two tributaries of the St. John. If a remedy is applied I would suggest that it take the form of issuing only one shad fishery license to a family and that the licensee be required to fish his or her own net, instead of allowing two licenses to a family, which may be fished by any person. The fishermen on the river contend that shad were not scarce, either in 1926 or 1927, but that water conditions were very unsuitable both years; being too high for profitable fishing. On looking at the returns from the last shad area—just below Grand Falls—it would appear that a considerable quantity of shad reached there and were able to pass the nets below, and there were only three nets operated at Grand Falls. Coming to the Miramichi rivers the 50 per cent loss would appear to be a matter for serious consideration, unless conditions were very abnormal in 1927. With a 600 per



cent increase in licenses issued and a decrease of 50 per cent in the catch of shad it looks bad from any angle. The price at which a large percentage of the catch sells makes it a very cheap food, and I hope that the supply will not diminish.

## STURGEON

Year	Cwt.	Value
1926.....	57	\$1,425
1927.....	24	528

This fishery, carried on by a few persons, is not very prosperous, and the price for the meat was not good in 1927. A considerable number of very small sturgeon are taken in other nets and are generally lost. Fishermen are warned to liberate the small fish alive but because of the great number of nets of all kinds it is quite impossible to know what is done with a large percentage of small sturgeon.

The total weight and marketed value of the commercial fisheries in this district, as the district was in 1926 and for the same area in 1927, and in the enlarged district in 1927, are as follows:—

Year	Cwt.	Value
1926.....	2,936	\$30,930
1927.....	2,671	23,583

## ENLARGED DISTRICT

1927.....	11,753	43,749
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## EQUIPMENT

Value	Value
1926..... \$15,185	1927..... \$31,811

## DOMESTIC FISHERIES

The quantity and value of the domestic fisheries in this district in the years 1926 and 1927 were approximately as follows:—

	Cwt.	Value		Value
1926.....	648	\$13,120	Equipment.....	\$17,332
1927.....	598	11,015	“.....	25,102

The area was practically the same in both years, as I had the non-tidal water of the Miramichi rivers in 1926.

Statistical records from the various subdistrict officers, show that there were 50 cwt. less in quantity and \$2,105 less in value in 1927.

Reports from the local officers and various anglers during the season were that trout fishing generally was quite satisfactory, and in the Miramichi district particularly good. The lessee of Cains river said that he never saw a better run of sea trout in that river, and there was a particularly good run in the Southwest Miramichi above Cains river, which is a tributary. The anglers are more anxious however to get salmon and grilse and do not fish trout as was the case before salmon angling became such a sport. There are thousands of persons in this district who do not live beside salmon waters, or who cannot afford to fit out for salmon angling, to whom trout fishing is the chief recreation, and also for food at times, consequently the conservation of the present supply, and the propogation at the hatcheries and ponds by the department, to be later liberated in lakes and streams, is well worth while and should be, and no doubt is, appreciated by anglers.

Salmon angling on the St. John river was only fair. In York county the water was too high during most of the season. In Carleton county the same condition prevailed but it did not affect the pools so much and angling was fairly satisfactory, while in Victoria county high water, presumably, spoilt



such fishing. There is no question but that when the water is high salmon do not rest long in the various pools between Fredericton and Grand Falls, consequently it is much more difficult to take any. When the rivers are low the water is warm because of its sluggish movement therefore salmon will rest longer and in larger numbers in the cool spots, until the urge come upon them to move on towards the spawning areas on the Tobique and upper St. John, and it is while they are resting in these cooling spots that the anglers have their greatest success. The statement is often made by unthinking persons, or persons who do not know the facts, that, because salmon cannot be freely taken with the fly at all times, poachers are causing the trouble with nets. That may, and no doubt is a fact at times, but it is exceedingly seldom that such is the fact in recent years. Time was when a great many salmon were illegally killed with nets and spears on the St. John river, but evidence cannot be produced, during recent years, to show that many salmon have been illegally killed with either net or spear in this water. Vague statements by irresponsible persons are not evidence. Only three times since the year 1902 has the net catch of salmon on the St. John river been less than it was in 1927. At the same time the salmon anglers of the Tobique river had the best season in history—86 cwt. taken with rod and line against 398 cwt. taken by all the salmon nets in the whole St. John river area—while angling on the St. John was not good. The superintendent of the Tobique Salmon Club informed me that never within his experience of thirty-five years on that river did he see so many salmon descending the river after spawning as during the fall of 1927. Admittedly the continuous fairly high water was favourable for the ascent but that fact does not detract from my statement that large numbers of salmon reached the upper waters, and proves the numerous statements of "salmon unable to get up river," "antiquated service," "illegal fishing going on without let or hindrance," "fishery officers and guardian doing nothing but drawing their pay," as untrue. Possibly if the Government of the province of New Brunswick would spend a small amount of money, seeing that practically all of the revenue from the fisheries of the province goes to it, in placing a man here and there to co-operate with your officers and guardians, the service would be improved. It might at least satisfy those who are now making so much noise about the amount of illegal fishing taking place, and would give us a chance to check up on how badly your officers and guardians are falling down.

On the Southwest Miramichi salmon angling was not considered good; more particularly after the middle of July. Before that date there was no particular reason to complain, and here again the service provided by the department was not greatly to blame. I have been advised by a guide who spent the whole of the angling season on the river, in York county, that angling was good until the middle of July. Is it any wonder that angling was not very good during the whole season when we consider the fact of the very small catch of salmon in the trap nets and gill nets—a total of 255 cwt. in both the Northwest and Southwest rivers. The fact of the matter is salmon did not come into these rivers in large numbers in 1927, for what reason I do not know, but if angling was unsatisfactory it was not the fault of the officers and guardians. I am told by the same guide that never were there so many parties of anglers on the Southwest, in York county, as were there in 1927. Fishing parties followed one another continuously from the upper waters to Boiestown, besides the scores of anglers who spent from one to three weeks in specified areas. Two anglers from Boston, U.S.A., took nearly one hundred salmon and grilse in one small area—Burnt Hill pools—which is probably the best small area on the river. Hundreds of salmon and grilse ascended and remained in one small stream sixteen miles long—Rocky brook—in York county, in addition to numbers taken by anglers. Whether the great number and the great length of drift nets and

trap nets, or the vast number of hair seals, or a combination of both, brought about the conditions of 1927, as they were, I am unable to say, but there is no question about that salmon were comparatively scarce in those waters. In every instance wherein violations have been reported to me, and evidence of value furnished, prosecution has followed, with the exceptions noted below.

## PROSECUTIONS

There were twenty-seven informations laid against violators of the Act. In two instances informations were withdrawn because of the ages of the young offenders, but they were required to pay fairly heavy costs. One was withdrawn because of bad information, but was re-entered and a conviction made, and convictions were obtained in the other twenty-four cases, fines amounting to \$275, being paid in twenty cases and fines amounting to \$80, being suspended, pending future actions on the parts of the offenders, of which there were four. Details of these will be found in Appendix No. 8.

## SEIZURES AND CONFISCATIONS

Seventy-nine seizures were made and the articles, consisting of one old Ford car, one canoe, nets, wire traps, spears and torches, etc., were confiscated and mostly destroyed; \$82.10 worth of materials were sold and some stored for future sale—when the fisheries open in the spring of 1928.

## REPORT OF INSPECTOR S. T. GALLANT, PROVINCE OF PRINCE EDWARD ISLAND AND MAGDALEN ISLANDS FOR 1927-28

## PRINCE EDWARD ISLAND

The total marketed value of the fisheries of the province of Prince Edward Island for the year 1927 was \$1,367,807, an increase of \$8,873 over that of the year 1926.

The following table is interesting as showing the comparison of the catch and marketed value for the year 1927 with that of the preceding year:—

Kinds of fish		1926		1927	
		Quantity caught	Value marketed	Quantity caught	Value marketed
Cod.....	cwt.	49,823	118,700	49,419	127,627
Haddock.....	"	1,472	3,065	1,168	3,787
Hake and cusk.....	"	13,803	20,881	11,326	16,780
Mackerel.....	"	6,054	20,653	6,455	28,255
Herring.....	"	63,930	89,915	51,834	88,368
Crabs.....	"			135	360
Alewives.....	"	360	720		
Salmon.....	"	164	4,015	124	3,031
Smelts.....	"	15,390	98,670	14,936	179,232
Trout.....	"	111	1,332	61	646
Scallops.....	gal.			192	240
Caplin.....	bbl.	157	628	183	850
Eels.....	cwt.	192	2,162	131	1,358
Tomcod.....	"	2,331	4,664	1,823	4,195
Clams and quahaugs.....	bbl.	867	4,533	1,174	5,760
Oysters.....	"	5,161	61,898	4,071	48,838
Tongues and sounds.....	cwt.			68	1,360
Cod liver oil, medicinal.....	gal.	30	45		
Cod oil.....	"	5,730	1,719	4,010	1,203
Lobsters.....	cwt.	66,298	926,718	62,800	855,917

As the Royal Commission appointed to investigate all phases of the fisheries have held three sittings in the province of Prince Edward Island, I shall refrain from making any recommendations, confining my remarks to the actual fishing operations for the past season.

#### COD

The season opened with poor prospects for marketing; the local market became quite active, however, and absorbed the bulk of the catch, good prices being obtained.

The catch by sub-districts is as follows:—

	Cwt.
West Prince county.....	7,330
East Prince county.....	696
Queens county.....	34,632
Kings county.....	6,761

#### HADDOCK

The catch by sub-districts is as follows:—

	Cwt.
Queens county.....	205
Kings county.....	936

#### HERRING

On account of unfavourable ice conditions fishing began late in May; the catch, therefore, is a little below that of last year. A large percentage of the catch was placed in cold storage for fox feed, a development of this fishery, which enhances its value considerably.

The catch by sub-districts is as follows:—

	Cwt.
West Prince county.....	15,925
East Prince county.....	11,263
Queens county.....	8,178
Kings county.....	16,468

#### LOBSTERS

Our shores were surrounded with ice until the middle of May, and in some localities up to the 25th, which had a disastrous effect on this fishery. The ice moved off several times and some gear was set out, only to be destroyed, however, on the return of the ice which occurred on two or three occasions. It is impossible to expect a normal catch under such conditions, but, should the weather be favourable for fishing this spring, we may no doubt look forward to a much increased catch.

Japanese crabmeat is now an established product and is offering keen competition to the canned lobster. As a result, lobster packers will have to endeavour to put up a first-class article in order to establish a preference for their produce among the consuming public, and compensate for the difference in the price of crabmeat, which, I understand, is about one-third less than that of canned lobster. If the buying public could be assured of the superior quality of canned lobster no doubt a much larger quantity could be sold at a reasonable figure.

The catch by sub-districts is as follows:—

	Cwt.
West Prince county.....	13,975
East Prince county.....	10,411
Queens county.....	13,067
Kings county.....	25,347



## OYSTERS

East and West rivers with tributaries, Vernon, Orwell and Seal rivers are all well stocked with small oysters so that the future of this fishery in the above-mentioned rivers is assured. The Richmond Bay areas are very slow to recover and it will be many years before they attain their former state of productiveness. The oysters shipped from this province to the upper Canadian markets were in good demand and fancy prices were secured throughout the season.

## SMELTS

The smelt fishing season for gill-nets opened on the 15th day of October. The fish were scarce but of a good quality and sold at extremely high prices. The bag-net fishing season opened on December 1, and although the rivers did not freeze over before the end of the month, record catches were taken in the East river and at other points.

The catch by counties follows:—

	Cwt.
West Prince county . . . . .	995
East Prince county . . . . .	5,328
Queens county . . . . .	8,066
Kings county . . . . .	547

## FISHERIES PROTECTION SERVICE

We had six patrol boats in the service and with the aid of the overseers and guardians a great many attempts at illegal fishing were suppressed. There is no doubt that the only means of preventing illegal fishing is by having a sufficient number of patrol boats employed, the captains of which must be men well qualified for the position; otherwise, the service is bound to suffer.

Total number of confiscations for violations of the fisheries regulations during the season 1927 covering 100 seizures, 45.

Total number of prosecutions during season 1927, 19.

In Appendix No. 8 will be found full details of the prosecutions for this district.

## REMARKS

The fishways built in 1925 at Laird's, Campbell's, Dixon's milldams, and at Vernon river, are proving a success and trout are ascending in large numbers to the proper spawning grounds. This will eventually increase the fishing in the above-mentioned streams and it is hoped that the department will see fit to construct more of these fishways in other streams that are equally important. Our streams are being fished continuously during the summer months by our own people and numerous tourists and everything possible must be done for the propagation of these sport fish. Sportsmen from the other provinces are loud in their praises of the excellent trout fishing in this province, and if the supply is to be kept up every attention must be given to propagation.

## CAPITAL INVESTED

The total capital invested was \$1,117,473, which covers sail and row boats, gasoline boats, carrying smacks, gill-nets, trap and smelt nets, herring nets, tubs of trawls, handlines, lobster traps, fishing piers and wharves, ice houses, small fish and smoke houses and fish canning and curing establishments.

## MAGDALEN ISLANDS

The total marketed value of the fisheries of the Magdalen Islands for the year 1927 was \$722,105, an increase of \$88,882 over that of the preceding year.

The following table gives a comparison of the catch and value of the year 1927 and that of the year 1926:—

Kinds of fish	1926		1927	
	Quantity caught	Value marketed	Quantity caught	Value marketed
Cod..... cwt.	38,892	87,010	38,894	83,238
Herring..... "	101,600	76,222	110,217	69,535
Mackerel..... "	17,595	66,035	61,885	177,046
Smelts..... "	50	250	80	240
Eels..... "	30	240	50	350
Clams and quahaugs..... bbl.	1,975	11,500	1,615	9,690
Lobsters..... cwt.	25,799	373,313	20,463	300,087
Squid..... bbl.	25	250		
Tongues and sounds..... cwt.	40	280	35	245
Hair seals..... no.	1,200	2,400	50,357	56,462
Seal oil..... gal.	3,500	1,750	63,030	21,314
Cod oil..... "	6,700	3,350	6,340	2,653
Fish skins..... cwt.	200	500	284	639
Fish fertilizer..... "	300	75	480	606

#### COD

There was little demand for cod, and, as a result, this fishery was not carried on to any great extent. The catch was about the same as last year but the price was somewhat lower.

#### HERRING

Herring made their first appearance on May 12 and were very plentiful. Very few vessels called for bait, and as the demand for smoked herring is poor, this fishery is not as remunerative to the fishermen as it was some years ago.

#### LOBSTERS

Lobster canneries began operations on May 19, but on account of very blustery weather during the months of May and June, the catch was a little below that of last year, but the prices paid the fishermen were the same.

#### MACKEREL

Mackerel fishing with nets began on the 8th day of June and continued until the 20th, the largest catch in the history of the islands being landed, viz., 16,876 barrels. It is impossible to properly handle these fish in such large quantities, and as a result a great many of them were of poor quality and a much lower price had to be accepted for them.

#### SEALS

The increase in the number of seals caught was 49,157. The catch amounted to 50,357 seals which is a record catch for the Magdalens.

#### REMARKS

The arrival of the steamer *Lovatt* on the first day of May marked the opening of navigation to the Magdalen Islands. On her first trip from Pictou to the islands she encountered heavy fields of ice and was out for four days. This service is giving entire satisfaction so far as passengers and freight are concerned, and the captain and crew are very obliging and attentive to their duties.

It is pleasing to know that the people of these islands will have communication during the winter months with the outside world by means of the Air Service; this will doubtless be fully appreciated by them.

# REPORT OF INSPECTOR J. B. SKAPTASON, PROVINCE OF MANITOBA, FOR 1927-28

There was an increase of nearly two million pounds over the banner year 1926, which is accounted for by nearly 300 more men operating.

The following are figures for the last five years:—

Year	Quantity	Value to fishermen	Value as marketed	Number men employed
	cwt.	\$	\$	
1923.....	154,090	739,321	1,020,595	2,530
1924.....	177,898	886,410	1,232,563	2,828
1925.....	191,329	1,061,331	1,466,939	3,390
1926.....	304,143	1,744,642	2,328,803	3,809
1927.....	322,967	1,423,100	2,024,708	4,095

Increases are shown in catfish of 803 cwt.; pickerel, 12,562 cwt.; trout, 507 cwt.; tullibee, 17,184 cwt. Decreases are recorded in goldeyes, 205 cwt.; perch, 2,593 cwt.; pike, 3,301 cwt.; whitefish, 5,008 cwt.; sturgeon, 260 cwt.

## MARKETS

While our fishermen have produced approximately the same per man as in 1926, their returns in many instances have been meagre owing to extremely weak markets. With an increased production of nearly two million pounds, the actual revenue to the fishermen of the province is, \$321,542 less than 1926, and to the exporter and dealer, \$304,095 less. While all varieties excepting catfish, goldeyes and sturgeon were affected by the slump in prices, pickerel and tullibee fared worse than any others, dropping about two cents per pound. As these two varieties constitute over twenty million pounds, or nearly two-thirds of the total production, the serious effect to the whole industry can be readily calculated.

The following are comparative prices as marketed, of the more important varieties, for the last five years:—

	1923	1924	1925	1926	1927
Catfish.....	10.0	11.1	10.6	11.3	12.3
Goldeyes.....	5.0	4.4	4.2	4.0	4.7
Perch.....	8.6	10.6	11.2	13.4	10.9
Pickerel.....	8.4	8.5	11.5	10.3	8.0
Pike.....	3.7	3.5	4.0	4.0	3.7
Sturgeon.....	47.3	50.0	40.9	51.6	53.9
Trout.....	7.5	10.0	9.0	11.0	10.9
Tullibee.....	5.2	3.6	4.1	5.9	4.0
Whitefish.....	7.1	9.5	9.5	9.0	8.5
For total catch.....	6.6	6.9	7.4	7.6	6.1

It will be seen the price realized per pound is the lowest in five years.

*The Sub-District of The Pas*, comprising all waters north of, and including the Big Saskatchewan river, but not the northern part of lake Winnipeg, has enjoyed a good season in all varieties of scale fish. The somewhat lower prices



that obtained as compared with 1926, was fully offset by the increased yield. While there were more men operating, the catch per man was considerably higher than the previous year. The slump in price which affected other districts very materially, was not nearly as injurious here, as pickerel and tullibee, in which the biggest drop was recorded, constitute a very small proportion of the production in this district. Moose, Cormorant and Herb lake, were the chief producers.

Cormorant lake just about produced its limit of 75 tons by the end of the season, February 28, 1927, and Clearwater lake had produced its limit of 40 tons by the end of January. About half the production was shipped fresh (green).

Three new lakes which were fished in a small way were Armstrong, Partidge Crop and Pikwitonina. These are all small lakes out from Mile 214 of the Hudson Bay railway and the principal catches were whitefish and tullibee. The whitefish produced were of exceptionally good quality, mostly jumbos and large mediums. One license was issued for Reindeer lake, where the production consisted mostly of whitefish, trout and herring. The catch was almost entirely sold locally.

So far this winter, Beaver lake appears to be the big producer, the limit of 100 tons being taken by the end of December. It is expected the 40-ton limit for Clearwater lake will be reached early in January.

Summer fishing for whitefish was carried on in a small way in Moose lake. The catch was good, but lack of ice and poor transportation facilities did not warrant extensive operations.

#### STURGEON

Sturgeon fishing on the Churchill was good, eleven licenses were issued, but the men operating were poorly equipped, and between them did not have an outfit of nets for more than five men. They produced 14,800 pounds of sturgeon, average dressed weight being fully 30 pounds. The first consignment consisting of 467 sturgeon were brought to The Pas before Christmas. The overseer reports these as the best samples of sturgeon, size and quality, that he has seen in that part of the country.

Summer fishing for sturgeon on the Big Saskatchewan river and its lake expansions, may be termed a total failure during the past summer. Both Cedar and Cumberland lakes were tried out for awhile, but only 2,000 pounds of the 50,000 pound limit was taken. The Nelson river also was very disappointing, only a little over 30,000 pounds were caught. It is felt that the restrictions placed on the sturgeon fishing by the new regulations were not made any too soon.

The completion of the new railway under construction to the Flin Flon Mines, will bring a number of lakes much closer to railhead. Egg lake, the Cranberry lakes, Athapapuskow, Beaver and Cold lake, all good fishing waters, will be within easy hauling distance to the railway, and as this is expected to be completed within the next year, considerable impetus will be given the fishing industry of the district.

The statistical returns for the fishing industry of The Pas district are given under one heading. It may be of interest to show here, the production by lakes:—

Lake	Whites	Pickarel	Trout	Mixed	Men
	cwt.	cwt.	cwt.	cwt.	
Armstrong.....	133'			50	1
Athapapuskow.....	332	182	170		5
Beaver.....	804	57	200		7
Cedar.....	30				3
Clearwater.....	785		90	8	10
Cormorant.....	1,021	449	66	135	13
Egg.....	562	2			4
Herb.....	1,213	577		372	13
Landing.....	646			86	4
Moose.....	2,389	728	374	100	32
Pelican.....	528	8			3
Pikwitonina.....	86				1
Partridge crop.....	440			120	3
Reindeer.....	85		75	20	1
Setting.....	97			114	2
Sturgeon.....	238	67	100	44	4
Windy.....	2				1
Wintering.....	202			38	1

## STURGEON FISHING

	Cwt.	Men
Churchill river.....	148	11
Sturgeon lake.....	3	2
Cedar lake.....	11	3
Nelson river.....	320	44

A great many of the men fishing in the district are only part time fishermen; mining prospecting, and trapping being their chief occupations.

Lake Winnipegosis has produced well during the year, there has been a slight increase in total catch. When it is considered the winter season was ten days shorter than that of 1926, and the summer fishing carried on under a limit, which was taken a week before the normal closing time, the increase in production is fully in proportion to the increased number of men operating. Below are figures for the last two years:—

	1926				1927			
	Whites	Pickarel	Other fish	Men	Whites	Pickarel	Other fish	Men
	cwt.	cwt.	cwt.		cwt.	cwt.	cwt.	
Summer.....	1,458	10,556	3,236	141	2,073	8,748	1,419	153
Winter.....	6,879	14,673	24,670	348	5,114	16,644	27,596	396
	8,337	25,229	27,906	489	7,187	25,392	29,015	549

Lake Dauphin shows a very marked increase over the 1926 production, with four less men operating. There is an increase from 875 cwt. to 2,313 cwt. The chief increase is in pickerel, of over one hundred thousand pounds, which increase took place mostly in the first two months of the present season, November and December, 1927, and can be ascribed to the high waters in the spring of 1927, allowing a good run of fish from lake Winnipegosis up the Mossy river.

Lake Manitoba shows a slight decrease in production with two less fishermen operating. The total catch is 7,398 cwt. less than 1926.

The following are five years' figures:—

	1923	1924	1925	1926	1927
Number of fishermen.....	626	779	905	1,128	1,126
	cwt.	cwt.	cwt.	cwt.	cwt.
Total production.....	25,655	48,658	51,587	85,256	77,858
Catch per man.....	41	62	57	76	69

The decrease is in all varieties excepting whitefish, which shows an increase of 529 cwt.

This lake is well served by railways on both sides, and for that reason lends itself particularly well to the fresh fish industry, which is becoming more and more popular. Prices obtained by this method of marketing, are as a rule much higher than for frozen stock. The present winter however, has been a disappointment as regards prices for fresh fish. There appears to be some definite evidence of a combine by New York commission men to keep down prices, and this is the chief outlet for fresh fish from the province.

Lake St. Martin shows a slight increase over last year in whitefish.

Lake Winnipeg taken all through, this lake has had a most productive year. With 132 additional operators, the catch of all fish shows an increase of nearly two million pounds.

	1925	1926	1927
All fish.....	84,763 cwt.	141,726 cwt.	161,597 cwt.
Number of fishermen.....	1,791	1,828	2,096
Price marketed.....	\$644,530	\$1,104,003	\$1,065,828

It will be seen that with approximately two million pounds increase in production over 1926, there is a depreciation in actual market value, of nearly forty thousand dollars.

Whitefish shows a falling off both in winter and summer fishing of 9,000 cwt. while nearly every other variety records a substantial increase. The greatest increases are in pickerel and tullibee, the former recording an increase of 12,000 cwt. over 1926, and the latter 18,000 cwt. These however suffered the greatest slump in prices, an average of about 3 cents per pound as paid to fishermen. The tullibee market was very poor throughout the year, and those operating extensively, or almost entirely for tullibee, had a poor year in spite of the good catch. Over a million pounds was placed in cold storage locally, and in Winnipeg, and much of it did not move until late in the summer and fall.

The summer whitefish season was rather a disappointment. With the limit of 3,000,000 pounds fully taken in 1926, a week before the season expired, there was general optimism for 1927. The catch was very disappointing however, and was nearly 700,000 pounds short of the limit.

The following are five years' figures for the summer whitefish operations on lake Winnipeg:—

1923	1924	1925	1926	1927
cwt.	cwt.	cwt.	cwt.	cwt.
15,238	14,567	23,330	33,115	25,679



It seems to be fairly generally thought that the decrease in the catch for this season should not cause any alarm. Unfavourable conditions prevailed; the season was late in starting, owing to ice, and was rather cold throughout, which usually keeps the fish from schooling. Indications towards the latter part of the season were for a marked improvement, and some very big individual catches were then made.

The fall season was good, with increase in production of both pickerel and tullibee. The increase in the latter was of course due to the change in the regulations allowing the use of tullibee nets from October 20 to the end of the season. The run of fish was not as heavy as the previous year, but legalizing the regular tullibee nets for this period compensated for it.

The following are figures for the pickerel production during fall and summer:—

1925 cwt.	1926 cwt.	1927 cwt.
10,626	22,860	30,724

Tullibee caught in fall operations:—

1925 cwt.	1926 cwt.	1927 cwt.
3,404	16,620	19,475

#### ANGLING

There is a considerable increase in the number of angling licenses issued during the year: 554 as against 194 in 1926. This is no doubt due to the inauguration of the one-day dollar permit, and the patrol by a special guardian throughout the summer of the lakes along the southern Manitoba border. These lakes do not offer much in the way of variety to the angler, and really nothing in what may be termed as sport fish. Pike, and in some few instances pickerel and perch, are taken. Rock lake, lake Killarney, and Oak lake are the favourite hunting grounds of the North Dakota anglers. Of these lakes, Oak lake has been the best during the last two years.

During the year there were fifty-four prosecutions in the province, for the following offences:—

Fishing illegal mesh nets.....	24
Fishing without permit or license.....	21
Illegal possession.....	5
Fishing in close season.....	3
Sturgeon fishing in prohibited area.....	1
	<hr/> 54

There were 244 confiscations during the same period. In all, 335 illegal nets have been confiscated.

Fines collected, \$311.

Sales of confiscated articles, \$1,120.05.

In appendix No. 8 will be found full details of the prosecutions for this province.

Mr. Wm. A. Found, Director of Fisheries, visited the province early in May, with a view to holding conferences with fishermen and dealers. Well-attended meetings were held at Selkirk, Winnipeg, and Winnipegosis. The fishery regulations were thoroughly reviewed at these meetings, and many valuable suggestions made for changes and amendments, which materially assisted in their revision and consolidation.

# REPORT OF INSPECTOR G. C. MACDONALD, PROVINCE OF SASKATCHEWAN, FOR 1927-28

During the year there was a commercial production of 57,800 cwt. of fish, this being an increase of 1,085 cwt. over the previous year. The increases and decreases in the different species were:—

Species	Increase	Decrease
Whitefish.....	3,656	
Pickarel.....	835	
Goldeyes.....	5	
Pike.....		623
Trout.....		406
Sturgeon.....		30
Tullibee.....		689
Mulletts.....		492
Mixed.....		1,171
	<u>4,496</u>	<u>3,411</u>

## WHITEFISH

The increase in production of whitefish was largely shown from Peter Pond and Churchill lakes, with a combined catch of 5,742 cwt.; lac la Ronge, 908 cwt.; Dore lake, 1,758 cwt.; Waterhen lake, 351 cwt.; Turtle lake, 460 cwt.; and Makwa lake district, 151 cwt., and was generally due to more yardage of nets. There was also an increase shown from lakes in the Qu'Appelle valley of 111 cwt., due to the advancing of the winter fishing season and more men operating.

There was a decrease in whitefish production from Red Deer Lake district of 1,244 cwt., due to the waters in that area being now included in the National Park, where no fishing was carried on during the summer or December seasons. Jackfish lake decreased 336 cwt. due to the restrictions during the summer season. There was a decrease shown in the Ile a la Crosse district of 2,366 cwt. of whitefish. Of this amount Kelly lake would account for 194 cwt., where fewer nets were used; Churchill river, 50 cwt., where no fishing was carried on during December; Deep river decreased 237 cwt.; and Ile a la Crosse proper, 1,855 cwt. Deep river is the connection between Ile a la Crosse lake and Churchill lake, the waters flowing from the latter. Near the outlet from Churchill lake is the connection between that lake and the east end of Peter Pond—locally called Little Buffalo lake. During the early part of December the run of fish in Deep river was from Ile a la Crosse lake to Churchill and Buffalo lakes, due largely to higher water levels. The production on the latter two lakes was unusually good, and it is claimed a large quantity of the whitefish taken were Jumbo whitefish and the same species as had been taken on Ile a la Crosse lake during previous years, with the result that the fishing on Ile a la Crosse lake was unusually poor during the present winter season. This migration of whitefish has happened on previous occasions in the same area.

There was also a decrease shown of 1,186 cwt. of whitefish on Long lake, when thirty-four fewer men operated. The decrease in the production may not only be due to fewer men operating but also to a large closed area against commercial fishing, and the water level, being some 4 feet higher, had a great effect on the migrating of whitefish from the closed area to the deeper waters where fishing was allowed.

There was a decrease shown of 406 cwt. of trout. This was due to no fishing being done on Kingsmere lake (Little Trout) or Crean lake, which have been taken within the National Park. The decrease of 30 cwt. of sturgeon was due to revised regulations prohibiting summer fishing for sturgeon. There

was a considerable decrease shown of the coarser species, which was largely due to the early freeze-up during November, allowing practically all fishing to be done in deeper waters during the opening of the winter season.

#### GREEN FISH

There were 2,171 cwt. of fish shipped during the winter season in a green condition, which was an increase of 852 cwt. over the previous year. Of this amount, 2,071 cwt. were whitefish and 100 cwt. tullibee. All of the above fish were shipped from Jackfish, Turtle, Makwa, and Waterhen lakes in the North Battleford district.

#### MARKETS

The total market value of the year's commercial production was \$503,609. This was an increase in value over the previous year of \$59,321 and was due partly to a larger production as well as an increase in the quantity of green fish shipped during the winter season. The markets during the closing of the 1926-27 winter season became slightly over-supplied, resulting in a quantity of fish being stored, largely in the United States. At the opening of the 1927-28 winter season the buyers were fairly keen and the season opened with a slight increase in price over the previous season. It is believed that the general limitations on production on all waters will be a big factor in regulating the markets, as the amount of fish available will be more definite than in previous years. The local markets appear to be well looked after, as one large fish company in particular specializes in local distribution of small and mixed shipments.

#### EQUIPMENT

The total value of all equipment used during the year in connection with the commercial operations was \$91,967, this being a decrease of \$3,727 from the previous year. There was an increase shown of 580 gill nets valued at \$9,501, and an increase of 2 ice houses on Dore lake.

There was a decrease shown of 7 smoke houses valued at \$4,350 all on Peter Pond lake where there are none shown for the year; a decrease of 2 piers, 3 on Long lake, and an increase of 1 on Okemasis lake. There has been a decrease of 27 row boats, 1 on Jackfish lake and 20 on Turtle lake, 2 on Okemasis, 6 on Red Deer, and an increase of 1 on Pierce lake and 1 on Makwa lake. There was a decrease of 8 gasoline boats, 1 on Jackfish lake, 4 on Turtle lake, 3 on Okemasis lake. The above decreases were all due to less summer fishing in the various districts.

#### CONDITION OF FISHERIES

The general condition of the fisheries throughout the province might be considered as favourable, and a much wider interest is evident, especially throughout the northern portions of the province, due to some extent to the scarcity of fur-bearing animals, resulting in an increased number of the native population fishing. Very few new waters were opened up during the year, and outside of Pipestone lake the operations during the year were all on waters that had been fished for a considerable time. Fishing in Ile à la Crosse lake dropped off considerably during the month of December, and especially in whitefish production due to the migration to other waters. Dore lake, which has been a very large producing water, has improved considerably over the previous year. Fishing in the Waterhen lake district shows a slight improvement. Lac la Ronge, which is the largest lake operated, has had an average production. In Long lake, where the commercial operations have been gradually restricted, the results were that neither the winter nor summer limit was



reached. Three lakes, Kingsmere (Little Trout), Crean and Red Deer, have been taken within the National Park during the year. Over fifty fishermen who had been operating on these waters during previous years producing a considerable quantity of whitefish and trout have since discontinued fishing or moved to other waters throughout the province. Other waters are retaining their production at about normal.

## OBSERVANCE OF REGULATIONS

During the year there were 57 prosecutions and a conviction was secured in all cases, resulting in fines amounting to \$277.50 being imposed with additional court costs of \$212.50, as follows:—

Fishing during close season.....	21
Fishing without a license.....	15
Offering fish for sale under Dominion license.....	2
Fishing with illegal apparatus.....	8
Possession of fish during close season.....	8
Failing to tag nets when in water.....	2
Illegal possession of fish.....	1
	<hr/> 57

There were also 42 confiscations made during the year, as follows:—

Illegal apparatus.....	16
Illegally caught fish.....	18
Legal apparatus.....	8
	<hr/> 42

There were 17 sales of confiscated articles made during the year, amounting to \$229.19.

In Appendix No. 8 will be found full details of the prosecutions for this province.

## FISHWAYS AND DAMS

During the fall of 1926 some of the important fishways in dams in the southern portion of the province were inspected by the fisheries engineer. Amongst these were the fishways at Katepwe, Craven and Pasqua, and three on the Moose Jaw creek near Moose Jaw, and all of which required some minor alterations. No repairs have been carried out on any of these fishways during the year. The dam over the Red river at Red Wing was removed during the spring. The fishway in the Cowan river dam is in good condition, but the dam will probably require some repairs during the coming season. A new fishway was installed in the Gravelbourg dam on Wood river. Arrangements were under way to have fishways constructed in small dams on the various creeks in the Cypress Hills area but owing to the very high waters during the entire summer season none of this work was undertaken.

## DOMESTIC

There has been a production during the year under domestic net fishing of 14,349 cwt. of fish, this being a decrease of 980 cwt. from the previous year. Whitefish decreased 950 cwt.; trout, 1 cwt.; pickerel, 4 cwt.; tullibee, 219 cwt.; mullets, 13 cwt.; and mixed fish, 85 cwt. Pike increased 274 cwt, and Goldeyes 18 cwt. The average catch per license was 1,461 pounds as compared with 1,611 pounds the previous year.

## ANGLING, 1927

There was an estimated catch of fish by anglers during the year of 23,139 cwt. This is a decrease of 3,776 cwt. from the preceding year. There has been

43,041 anglers reported, being a decrease of 1,873 from 1926. This decrease in catch and number of anglers is reported to be largely due to the unfavourable weather conditions during the summer season. The average catch per angler was 54 pounds of fish, as compared with 60 pounds during 1926.

#### EXAMINATION OF WATERS

There were twenty-four waters examined during the year to determine their suitability for fish life. Of this number twenty-one were reported to be suitable.

It is gratifying to be able to report that as a result of the planting of cisco or lake herring in Quill lake during the spring of 1924, that about 200 pounds of this species was taken in nets during this year, and also that 300 pounds of whitefish were taken from the same lake. Although the first official planting of whitefish was made during April, 1926, it is presumed that accidentally whitefish fry got mixed with the cisco planted during 1924.

The staff of fishery officers gave considerable assistance to the Fish Culture Branch officers during the year.

I regret to report that four of the older fishermen were drowned during the fall, and that none of their bodies have as yet been located.

#### REPORT OF INSPECTOR R. T. RODD, PROVINCE OF ALBERTA, FOR 1927-28

The commercial catch shows a decrease in both quantity taken and value as marketed. Market conditions in the spring were poor and this accounts mostly for the decrease in both quantity and value. There was a practical cessation of fishing at Buffalo bay and Lesser Slave lakes, where an amount exceeding 500,000 pike and pickerel was obtained during the spring fishing of 1926. Very stormy weather prevailed during August and September at Lesser Slave lake, many fishermen reporting the entire loss of equipment.

#### INCREASES

The most gratifying increase to be recorded for the past season is on lake Athabasca where the summer fishing for trout was the best on record. While close to 1,000,000 pounds of trout and whitefish was obtained, almost the entire amount was caught by one company, a second company starting operations too late to do much fishing. Reports were received that, owing to the heavy catches, it was necessary for the operators to stop fishing periodically as they were unable to handle the fish caught with the limited equipment on hand.

In spite of the great distance from lake Athabasca to Chicago and other eastern points the shipments of trout and whitefish arrived at their destination in splendid condition. The trout are of an excellent quality, the flesh being pink and the fish of uniform size between 7 and 10 pounds, although specimens exceeding 40 pounds were caught. A small increase in the catch was reported for the Lac la Biche district and Moose lake for the summer season, and during the winter season at Pigeon, Lesser Slave, Sturgeon, Primrose and Cold lakes. Fishing in the latter lake was particularly good, the limit being obtained in slightly under one month's fishing. It is also noted that a large increase is shown in the Peter Pond lake district in Saskatchewan where there was more extensive fishing through commercial licenses being granted. Good fishing at Churchill lake obtained during the first part of the year. This district is in excellent shape and should last with the present limit for many years to come. This district shows an increase in the neighbourhood of half a million pounds, chiefly of whitefish and pickerel.

## DECREASES

The heaviest decrease recorded is from Lesser Slave lake where the usual heavy spring fishing, as witnessed the year before, was seriously affected by the market conditions prevailing. It was reported that the market was glutted with coarse fish from the other western provinces, hence fishing in Lesser Slave lake was more or less at a standstill. I have no reason to believe that the lake is depleted, and without question the present safe limit should be easily obtained. Lac Ste. Anne and Wabamun show slight decreases, as well as Beaver lake which was heavily fished the year previous and showed up poorly during 1927. This lake is considered to be in a depleted condition. The winter operations show the lakes as producing fairly steady with the exception of Winnifred lake, which was also too heavily fished the previous winter. Winter prices were extremely good and market conditions generally excellent.

## MARKETS

Spring prices, as already reported in so far as this province was concerned, were poor and it was almost impossible to dispose of jackfish at any price. The price for whitefish during the summer was fair and good in the fall. Athabasca trout are gaining an enviable reputation in the eastern markets and are standing the long haul from lake to market very well. Extension of this market may be expected, through larger operations now contemplated at lake Athabasca. It is expected that three companies will be operating on this lake for 1928. Three hundred thousand pounds of the trout caught were pan frozen and shipped after the season closed and were marketed very successfully. It is stated by one of the companies about to operate that a market was assured for their whole catch. Winter prices have been very good and the majority of fishermen and dealers are satisfied with their season's work.

## TRANSPORTATION

There has been no great change in this feature over last year, with the exception of transportation from lake Athabasca to Waterways. The companies operating have invested heavily in equipment for catching and sending the fish to market in the best condition. Great care is being taken to see that the fish is properly iced and taken as swiftly as possible from the lake to the end of steel at Waterways, a distance of over 200 miles. Present developments comprise three new stern wheel boats, a new freezing plant at the lake, an ice-making plant at Waterways, and ammonia freezing plants on the barges conveying the fish up the Athabasca river, as well as many buildings for the men and horses. The trail from Cheecham to Peter Pond lake was in good condition last year, there being plenty of snow to commence operations. The express companies co-operate well with the fish dealers and every facility is being given by the railway companies to see that the fish arrive in the best possible condition.

## EQUIPMENT

As has been previously explained, the Lesser Slave lake fishermen were heavy losers both in nets and boats through the bad storms on that lake during the fall. Some loss was also felt in piers and wharves through ice movements in the spring. One Edmonton fish company has installed a large cold storage and freezing plant in Edmonton, using the Ottesen process, with a storage capacity of six cars. Two companies are desirous of building freezing plants on Peter Pond lake for summer fishing. Altogether there is a keen desire evident from all quarters of maintaining and, if possible, improving the standard of fish exported from Alberta. Cottages and boats were built at Cold lake to accommodate anglers and there is now ample room for all anglers at this most popular resort.



## OBSERVATION OF THE REGULATIONS

The number of prosecutions for the year 1927 was 73 and the number of confiscations 41. Full details of prosecutions will be found in appendix No. 8.

Fishing in close season contra to Sec. 21 and 33.....	15
Fishing without licenses contra to Sec. 1.....	13
Fishing with illegal mesh net contra to Sec. 17 and 11.....	11
Pollution of streams contra to Par. 44.....	9
Fishing without angling permit contra to Sec. 32 (a).....	8
Fishing in closed waters contra to Sec. 24 (c).....	7
Having undersized fish contra to Sec. 34.....	4
Fishing with lights at night contra to Sec. 29.....	2
Fishing with illegal apparatus contra to Sec. 11.....	1
Obstructing creek contra to Sec. 12 (1).....	1
Selling fish under domestic license contra to Sec. 2.....	1
Assisting angler to fish contra to Sec 32 (a).....	1
Total.....	<hr/> 73 <hr/>

Much valued assistance was given by the undermentioned associations as well as by the sixty-two honorary guardians appointed for the purpose of assisting the overseers and guardians in their large territories:—

1. Northern Alberta Fish and Game Protective Association.
2. Coleman Rod and Gun Club.
3. Claresholm Fish and Game Protective Association.
4. Lethbridge Rod and Gun Club.
5. Calgary Fish and Game Protective Association.
6. McLeod Anglers' Association.
7. Bellevue Fish and Game Association.
8. Pincher Creek Anglers' Association.
9. High River Angling Association.
10. Cardston Fish and Game Association.

## IRRIGATION SYSTEMS

Owing to the heavy rain fall and continued wet weather throughout southern Alberta very little irrigation was required, in fact some of the small systems were never opened during the summer. No complaints have been received regarding destruction of fish.

## DAMS AND FISHWAYS

The fishway in the Canadian National Railway's dam at Burbank on the Blindman river was again taken out by the ice in the spring, owing to high water during the summer. This could not be repaired until late in the season, when a new fishway was installed. This was placed to one side of the spillway and where it is now protected from ice and high water by the wings of the dam.

The fishway in the Canadian Pacific Railway dam in the Vermilion river at Hazeldine, Alta., has been completed and is in good condition. A new fishway was also erected in the Canadian National Railway dam in the Lobstick creek at Leslieville. Repairs were also made on the fishways in the Canadian National Railway dams in the Vermilion river at Vermilion and Vegreville. The dam in Willow creek, owned by the town of Claresholm, was carried away in September by flood; this has allowed a great quantity of pike and suckers to ascend to the upper reaches of the creek. This dam was considered beneficial to the trout fishing, as it prevented the pike and suckers from ascending to that part of the stream frequented by trout. It will be rebuilt as soon as possible.

The large dams on the Bow river at Bassano and Carseland owned by the Canadian Pacific Railway and Canada Land and Irrigation Company and the Eau Claire dam at Calgary, in my opinion have greatly benefitted the trout fishing in the Bow river and tributaries, as they have prevented innumerable

quantities of pike and suckers from reaching the trout waters. This is especially so with regard to the first two named, as no trout are found below them, and that part of the river is infested with very large quantities of pike, suckers and ling.

#### ANGLING

Angling throughout the province was not so good as during 1926. This was not due to the streams being depleted but due to the continued wet weather through the greater part of the season, which kept most of the roads in an almost impassable condition and also kept the streams flooded and in a muddy condition. This was especially so in the southern part of the province. There were a few short periods when the roads were passable and the streams clear, when excellent catches were taken especially in the Highwood river. Good angling was also obtained in Willow creek and in the Old Man river and some of its tributaries when the water was clear. There was also an increase in the angling carried on at Cold lake for lake trout. The sale of angling permits was increased from 643 in 1926, to 926 this season, and the catch taken by anglers increased from 42,370 pounds to 54,735 pounds. The largest trout taken during this season was 40 pounds. The angling for pike, perch and pickerel in the lakes was good and especially so in Lac la Nonne where excellent catches were taken.

#### EXAMINATION AND RESTOCKING OF LAKES

Very few lakes were examined during the year with a view to stocking, only ten being examined by myself and staff. An attempt was made to stock a few lakes by transfer of adult fish by the staff with the assistance of the parties interested in the lakes, but very little was accomplished owing to the bad condition of the roads. Those who agreed to supply the transportation refused to put their cars over the roads, therefore a number of fish already trapped for transfer had to be liberated and the work abandoned.

A few facts regarding the stocking of waters with fry from the Banff hatchery might not be out of place. During October, 1919, Hybernian and Marjorie lakes in Jasper Park were stocked with rainbow trout fingerlings, 4,000 being liberated in each. Until that time these lakes contained no fish of any kind. I have while at Jasper recently received numerous reports of very fine rainbow trout having been caught from Hybernian lake, some weighing up to 4 pounds.

Large rainbow have been seen in Marjorie lake during the spawning season, but it is claimed they are very difficult to catch. The fish will not take the artificial bait owing to the great amount of natural food in the lake.

Loch Leven trout up to ten inches in length were taken in the Little Red Deer river this season, which is the result of stocking since 1924. Rainbow trout up to 3½ pounds were also taken in the Highwood river, the result of the stocking during the season 1919 and each year since. About 30 per cent of the catch from this stream is rainbow trout. These trout are now being taken from numerous other streams in southern Alberta where they have been liberated and where none were found previous to stocking from Banff hatchery.

#### REPORT OF CHIEF INSPECTOR MAJOR J. A. MOTHERWELL, WESTERN FISHERIES DIVISION (BRITISH COLUMBIA) FOR 1927

#### SALMON

The calendar year of 1927 closed with a total pack of 1,361,977 cases of salmon, as against 2,065,190 cases in the previous year. The year of 1926 produced the record pack of the province, but the comparison of these two years



is not a fair one when endeavouring to arrive at the condition generally of the salmon industry. The only fair comparison would be by taking the packs of the several varieties and comparing each with that of the brood year in each case. A very erroneous impression is created in the minds of the public by newspaper and other reports being published which do not make the correct comparison.

The average pack of all varieties for the past five years was 1,641,381 cases and had it not been considered necessary to greatly curtail fishing operations during the year, undoubtedly the 1927 pack would have almost, if not quite, equalled the record one of 1926.

The pack of sockeye amounted to 308,052 cases, compared with an average of 348,442 cases during the past five years.

In the Naas river area the total was 11,986 cases, which is not at all good although this has never been a remarkably productive sockeye district. Considering the fact that a considerable portion of the runs of sockeye heading for the Naas river run the gauntlet of the intensive fishing by traps and seines in southeastern Alaska, in addition to the gear on the Canadian side of the line, it is not considered surprising that the sockeye pack on the Naas is not being maintained.

In the Skeena system the total in the case of sockeye was 83,988 cases, which, particularly in view of the extra measures taken in the way of closed periods, may be considered as quite satisfactory. There would appear to be no reason to anticipate that the supply of this variety in the Skeena system cannot be maintained.

The Rivers and Smiths Inlet district produced a pack of 101,053 cases of sockeye, which is a very satisfactory showing. Owing to the large number of gillnet boats being fished it was necessary to enforce an additional nine hour close period during each week-end of fishing.

The Fraser river again produced an unexpectedly large pack of sockeye, amounting to 57,085 cases. A considerable portion of this was due to the unusually late run similar to that which ascended the river in the late fall of 1926. As the sockeye to the Fraser system are predominantly four year fish, a fair comparison of the pack would be with year 1923, when the total amounted to 29,423. However a more informative comparison would result from the inclusion of the catch in the Puget sound area. In 1923, the brood year, the pack of Puget sound and the Fraser river together was 76,825 cases and in 1927 it amounted to 153,428 cases, an increase of 100 per cent.

The coho pack for the whole province amounted to 162,732 cases, as against an average for the past five years of 158,978 cases.

The total pinks produced in the province amounted to 247,626 cases, compared with the average of the past six years of 524,413 cases. This shows a reduction of 80 per cent compared with the brood year of 1925, when the total was 445,400 cases. The shortage was practically all in the northern district. One suggestion as to the cause of the small runs is that after the eggs were hatched out in the brood year of 1925 the mortality in fry was unusually heavy, or that conditions at sea, between the time the fry left for the salt water and when they returned as mature fish, were such as to permit only a small percentage to survive and return to the streams in which they were hatched. Another suggestion is that very intensive fishing in the areas to the north of the international boundary has resulted in reducing the quantity of pinks hatched in British Columbia streams. It has been demonstrated through tagging operations that pinks pass through the Alaskan waters on their way to the Naas and Skeena districts, and even areas farther south.

The spawning conditions in the pink areas in the brood year of 1925 in the north, and particularly in the Central area, were not considered entirely satis-



factory, and in order that the toll during the year under review might not be such as to further deplete the supply of this variety, unusual precautions were taken by means of extensions of the weekly close seasons, an entire week's prohibition of fishing at the height of the run and early closing at the end of the season. These measures have undoubtedly produced good results, judging from the reports on the spawning areas—apart from the Central area—which have been received from the officers making annual inspections. Undoubtedly the pink situation will require to be well taken care of until it has recovered.

In the Fraser river district the pack of pinks was greater than in the brood year by approximately 3,000 cases, due to an enormous run.

Chums were very plentiful over most of the British Columbia coast during the year and the quantity taken amounted to 563,194 cases, compared with an average during the past five years of 567,741 cases. This total is eminently satisfactory, considering the fact that from two to three weeks of the best chum fishing at the height of the run was cut off, due to the unusual restrictions as a result of the enormous amount of fishing gear in the water. There is no doubt but that had not these unusual restrictions been put into force the pack of chums would have been a record one.

The previous warning to the industry to the effect that continued fishing operations would result in drastic conservation measures did not have the desired effect and each year the quantity of gear in the water has increased, and in addition the methods of operating purse-seines, for instance, have become much more efficacious.

The salmon gill-net licenses have increased during the past four years 53 per cent, salmon trolling 99 per cent, and salmon purse-seines 128 per cent. Obviously this keen and uneconomic scramble for the salmon, if permitted to continue unchecked, would in a very short time result in the serious depletion of the runs. Both the salmon fishermen and cannerymen appear to have finally reached the conclusion that this unreasonable competition can only result in disaster, and there would appear to be good reason to expect that the coming year will see salmon-fishing operations conducted on a more economical and reasonable basis.

The greatest difficulty, of course, is with the pink variety. The sockeye are being well taken care of and the coho and chums usually arrive at the spawning streams at a time when weather and water conditions are such as to permit a reasonable escapement. In the case of the pinks, however, the situation is much more difficult as they often arrive at the spawning streams in the hottest and driest time of the year. If there is not sufficient water in the streams, the salmon play about outside and are an easy prey to seines, unless practically a day and night efficient patrol is provided at every pink spawning stream in the province. With the proposed new measures in the way of cutting off inlets and moving out of boundaries, much assistance will be given towards conservation, but there can never be any assurance that it will not be necessary on short notice to close all fishing for pinks or even any other variety for considerable periods, in order to maintain the supply.

#### HALIBUT

The catch of halibut landed in British Columbia totalled 300,532 cwt. in 1927, as against 315,095 cwt. in the previous year. Statement No. 7 gives the total from 1913 to 1927.

It would not appear that the close season of three months each year during the past three seasons has had the effect of materially reducing the quantity landed.

Indications would seem to warrant the expectation that prices on the reopening of the season next spring will not be particularly attractive to the

fishermen. This is largely due to the fact that the stocks of frozen halibut have not been completely disposed of, and it is not likely that prices for the fresh article will be particularly satisfactory to the fishermen until the stocks of frozen halibut have been sold.

It has been suggested that the reason for the large stocks of frozen halibut is that the market in the east has turned of recent years to the several varieties of filleted fish produced on the Atlantic coast.

#### HERRING

As will be seen by statement No. 8, a very large percentage of the herring caught is drysalted and shipped to the Orient, the principal market being in China. Ten thousand four hundred and sixty-six tons were used in reduction works plants. In the vicinity of 2,000 tons is frozen each year at Prince Rupert, Butedale, Vancouver, and Kildonan for the purpose of bait for the halibut fishing. A smaller quantity is used fresh for the purpose and a comparatively infinitesimal quantity finds its way to the fresh fish markets and the smoke houses. Although efforts have been made to build up a paying business in the canning and also the Scotch curing of this variety, it has not been found profitable.

The interesting statement No. 8 gives the records of the drysalt herring pack from 1918-27. The fluctuation is not necessarily due to lack of supply, but is largely caused by the unstable market conditions in China, due largely to the internal troubles of that country. The supply of raw product naturally has fluctuated from year to year, but there is no evidence that the runs of herring to the British Columbia coast are becoming depleted in any way.

#### WHALING

The two stations at Naden Harbour and Rose Harbour at the northern and southern extremities of the Queen Charlotte Island group were operated again this year, with a catch of 258 whales as against a total of 269 for the preceding year.

Statement No. 10 covers the catch from 1918 to 1927.

#### FUR SEAL SKINS

Statement No. 11 shows a very large fluctuation in catches between the years 1912 and 1927. Prices naturally very materially influence the activities of the Indians, who are the only ones permitted under the Pelagic Sealing Treaty to take fur seal skins. During the last two years, for instance, the prices have averaged about \$8 per skin to the Indians, and in view of such small returns, the weather conditions during the migration of the fur seals, and the profitable business of trolling for salmon, the catch last year fell off 50 per cent. No doubt also the more efficient patrol which was available for the purpose of protecting the fur seals had something to do with keeping the total down.

#### DESTRUCTION OF SEA LIONS

On June 7, the C.G.S. *Givenchy*, equipped with a Lewis gun, long Ross rifles, .22 calibre rifles and .22 and .32 calibre automatic pistols (the smaller firearms being used primarily for the pups) and accompanied by Mr. W. E. Maiden, Secretary of the British Columbia Fishermen's Protective Association, an expert machine-gunner, left for the vicinity of the Virgin and Pearl rocks to again do what was possible during the pupping time of the sea lions to reduce their numbers. Considerable difficulty was again experienced owing to the heavy seas running, which made operations extremely difficult and hazardous, the



rookeries being very low and exposed to the full sweep of the Pacific ocean. Undoubtedly the use of short Lee-Enfield rifles would be much more efficient, in that they are shorter and lighter and more convenient to handle, in comparison with the Ross variety. It has not been possible to date, however, to obtain the Lee-Enfield.

The total number destroyed since the commencement of these operations is as follows:—

—	1923	1924	1925	1926	1927	Totals
<i>Virgin Rocks—</i>						
Pups.....	649	903	1,067	565	635	3,819
Adults.....	1,111	1,333	1,520	877	858	5,699
<i>Pearl Rocks—</i>						
Pups.....	5	312	102	146	40	605
Adults.....	120	158	138	368	130	914
Totals.....	1,885	2,706	2,827	1,956	1,663	11,037

The officer commanding the expedition reports that yearlings and two-year-olds were found to be practically extinct, during the last hunt, which condition he attributes to the large number of pups killed during previous operations. He further states that the rocks were found to be practically monopolized by old sea lions of both sexes, but in numbers considerably less than in previous years. Mr. Maiden states that he observed fresh fish bones on the Virgin rocks on the date of one raid, but that these were not present on the date of the previous one. This he feels to be evidence to show that the sea lions were feeding on fish, although it is understood that during the pupping season these animals do not take food.

A sample of sea lion blood was obtained and forwarded to the Biological Station.

The fishermen in the vicinity again signified their approval of the hunting operations by means of gifts or cigars to the members of the crew.

#### PATROL SERVICE

In view of the immense increase in the number of fishermen and the quantity of fishing gear operated during the year, particularly in the case of salmon, and the resultant keen competition, the difficulties of the patrol service were largely increased and it is felt that if proper measures are to be taken looking to the conservation of our salmon supply, particularly, several of the present overseers' areas must be considerably reduced, and more of these permanent officers appointed. Each should be equipped with an efficient departmentally owned boat and these boats will require to be kept in commission a longer period each season in order that the overseers can give better attention to the immensely important problem involved in the inspection and care of the spawning grounds. During the fishing season the duties in the way of protection and other relative matters consume all the time of the overseers, and it is only after the season is over that it is possible for them to undertake a really satisfactory inspection of the numerous salmon streams in each area.

The inspections by guardians and patrolmen are very often unsatisfactory owing to the fact that these officers are usually new men each year. Obviously their lack of experience and information with regard to conditions of previous years detracts very greatly from the value of their reports. The only hope we have of obtaining satisfactory information is by keeping the overseers and several of the departmentally owned patrol boats on duty for considerably longer periods. Even by that arrangement the inspections cannot be entirely



satisfactory due to the fact that one officer cannot hope to thoroughly examine all salmon streams in his district during the time the salmon are spawning. This task is physically impossible.

Fortunately some seaplane service was provided and although not sufficient, at the same time the moral effect of there being even one plane available to the administration cannot be over-estimated, but if the industry finds that only the limited service which can be expected from one plane is available, it will soon realize the limitations and a considerable portion of the value of the moral effect will be lost. As evidence of the efficacy of the air service in the way of fishery protection, I would refer to the resolution presented at a recent fishermen's meeting in Prince Rupert to the effect that an adequate air service should be provided by the department for the protection of the fisheries, as the fishermen themselves felt it to be the most effective arm of the service.

The lowest possible minimum service consistent with reasonable results would be two planes capable of service at all times, which would obviously necessitate a third in reserve. Commencing with the opening of the fishing in the north, one plane is required with headquarters at Prince Rupert and another with headquarters in the vicinity of Swanson bay. Later one of these could probably be transferred to the Queen Charlotte island area and the other farther south to possibly Alert bay or Quathiaski cove. Much, of course, depends upon the class of aircraft used and it is necessary to have considerable speed, a high ceiling and the ability to withstand a certain amount of sea.

The service provided during the past year was fifty flying hours to start with, which amount was later increased by 42 hours, 2 minutes, making a total of 92 hours, 2 minutes. The distance travelled was approximately 5,223 miles.

The boat patrol service was taken care of by twenty-two Departmentally owned power boats, ninety chartered power boats and twelve row boats. The *Malaspina* during the season logged 18,958 miles and the *Givenchy*, 16,190. The latter boat was again used in connection with lifesaving on the west coast of Vancouver island with headquarters at Bamfield.

One of the patrol boats owned by the department, the F.P.L. *Cloyah* was destroyed as a result of an explosion in the engine room. The crew were fortunate in being able to make their escape in the tender, the engineer suffering severe burns about the face and hands.

For the purpose of replacing worn out patrol boats, tenders were called for three fifty-two footers powered with sixty-five horse-power Thornycroft reduction geared gas engines. It is hoped that by using this variety of engine there will be much less vibration and that the noise of the exhaust will not be such a handicap as in the case of the Diesel power boats. In these cases the exhaust can be heard a very considerable distance and is a warning to those breaking the fisheries regulations and gives them an opportunity to escape. It is also expected that the greater cost of fuel for the reduction geared gasoline engines will be more than offset by the lower cost of replacements in engine parts.

These three boats were designed and specifications prepared by Mr. J. W. Allen, Gas Engine Foreman, whose duties include looking after the annual overhaul and upkeep of the patrol boats, as well as seeing that the chartered boats give their proper performance. His knowledge is also utilized by other departments of the Government.

#### REGULATIONS

As was expected the salmon fishing particularly during the year became more intensive than ever in the past and this fact called for extraordinary measures to the end that a satisfactory supply of parent salmon might be permitted to reach the spawning grounds.

It became necessary to increase weekly close seasons for sockeye fishing in the northern areas from forty-eight to a total of fifty-seven hours on the Skeena river for two week ends, and during the whole of the fishing season on Rivers and Smiths inlets. For the purpose of saving the run of pinks which showed evidence of being light, a special close period from August 26 to September 4 was applied to all fishing gear, apart from salmon trolling in the whole of the province, with the exception of that area through which the salmon proceed in passing to the Fraser river spawning grounds.

At the end of the season, in order to save a reasonable quantity of chums and cohoes for the spawning areas, fishing in all of District No. 2 was finally stopped on September 23, with the exception of the Queen Charlotte Islands, where the date was set at October 7. These dates compare with October 15 and October 22 respectively in the previous season, the time allowed for fishing being reduced in 1927 by approximately three weeks.

In District No. 3 in addition to the special close period from August 26 to September 4, all fishing was closed from two to three weeks earlier at the end of the season.

The result of the above closures was that a comparatively satisfactory quantity of pink salmon were able to pass up to the spawning grounds, with the exception of certain portions of the Central area and in the Naas. An examination of the spawning grounds of the Skeena watershed showed a very considerable run of pinks had either succeeded in passing up the river during the special close season or were very late in arriving, which permitted their reaching the spawning areas.

An excellent supply of chums and cohoes was saved for the spawning streams over the whole province, with the exception of some of the streams on the Queen Charlotte Islands. The inspector for District No. 3 reports that the run of chums was unusually heavy through his district, particularly in certain portions of the west coast of Vancouver island, where the quantity was the largest on record.

On the Fraser river and in the waters through which salmon are obliged to pass heading for the Fraser, and the immediate vicinity, the weekly close period was increased from time to time very materially resulting in reasonably good spawning conditions.

There is no doubt but that had not these unusual precautions been taken the huge quantity of gear in the water and the intensity with which it was fished would have resulted in a very serious situation. The inspection of the spawning areas, however, showed that the extra restrictions had obtained the desired result.

If the industry continues to place such huge quantities of gear in the water, then the fishing restrictions must be greatly increased, even at the expense of profits to fishermen and cannerys. The fish must be given the benefit of the doubt from a conservation standpoint. In any event, it is imperative that certain inlets be cut off entirely, that salmon purse-seines be reduced in size and that all fishing be kept farther out from the mouths of streams.

#### VIOLATIONS OF FISHERY REGULATIONS

There were one hundred and sixty-six prosecutions entered for violations of the fishery regulations during the season. Particulars of these will be found in appendix No. 8.

#### POWER BOATS IN SALMON GILL-NET FISHING DISTRICT NO. 2

Although there was an increase of 549 salmon gill-net licenses issued in District No. 2, the number of power boats used in these operations increased



only 45, being 630 as against 576 for the preceding year. The above total compares with 85 only used in 1924. Only white British subjects and Canadian Indians are permitted to operate power boats in District No. 2 in salmon gill-net operations.

#### CLEARING OBSTRUCTIONS IN SALMON STREAMS

Each season as this work is extended the necessity for it becomes more apparent. An endeavour is made to have a thorough examination of every salmon stream in the province once a year, but this has been found very difficult owing to the fact that officers are required to supervise such large districts, and the conditions in the wild country through which the inspection has to be conducted are so arduous as to consume a great deal of time and is expensive. Every obstruction which is reported either by the fishery officers or the fishermen or from any source is immediately investigated and if it is possible for the local officer to do what is necessary, his instructions are to always take out the obstructions. If however, assistance is required such is provided in the way of men, powder or other facilities, and if the conditions warrant, an inspection is made at the first opportunity by one of the engineers and arrangements made for the most practical way of dealing with the situation. Much time is lost, however, in inspections resulting from reports by people who are not sure of their information. Again, log jams for instance which would appear to many observers to be an obstruction to the ascent of salmon often prove to be just the reverse, and while not impeding the progress of the parent fish to the spawning grounds, are often a protection to the young fish coming down and serve also as collectors of food for the young.

At Hells Gate canyon in the Fraser river conditions since the clearing away of the slide which occurred in 1913 have remained unchanged and those who have been in the best position to know, have felt that the salmon runs have all succeeded in passing up to their spawning grounds, although, due to unfavourable stages of the water, there may have been hours or even days when they were delayed. In spite of several reports to the effect that the fish were permanently blocked, or were so badly damaged at the Gate as to prevent their reaching the spawning grounds in fit condition there would appear to be no doubt but that the salmon did get through this obstruction, at least, until the very last runs of the seasons 1926 and 1927. In fact, there is every reason to believe that all the 1926 run succeeded in passing this point. However during the last two seasons there has developed an unusually late run of sockeye which has arrived at Hells Gate in a very advanced stage towards spawning. The condition of this run in the fall of 1927 was found to be even worse than that of the preceding season and whilst there was no unassailable evidence to justify the conclusion that any run was permanently prevented from ascending, there is very considerable doubt as to whether the latest run of 1927 did actually succeed. It has been suggested that the lack of male fish in the Kakawa lake spawning area for instance, which is tributary to the Coquihalla system, is evidence that they were probably able to pass Hells Gate, but that the female, being weaker, were obliged to turn back and passed up to the Kakawa lake spawning grounds. It is hoped that investigations will divulge the facts in this matter in the very near future.

Following the experiences of 1926 it was felt that in order that there might be absolutely no doubt as to conditions at Hells Gate being as good as they could possibly be made for the ascent of salmon, the department arranged for a board composed of civil engineers in the employment of the several branches of the federal and provincial governments in British Columbia to study the situation and advise as to whether in its opinion conditions could be improved. Obviously, considerable time is required for such a study in order that it may



be thorough and the results conclusive. It is expected that early in the season of 1928 a report from the board will be available to the department. The engineers' report in more detail will be found in appendix No. 4.

#### MEETING OF OVERSEERS

The practice of gathering together before the fishing season each year all the inspectors, overseers and a number of guardians for a conference of several days at the office of the chief inspector in Vancouver is proving its value more and more each season, and it is the intention to continue these meetings.

#### FISH MEAL AND OIL OPERATIONS

Four additional licenses for reduction works plants were issued during the year, making a total of twenty-seven in all. This business has proved to be fairly profitable generally speaking and should continue to be one of the most important branches of the fishing industry of the province. Pilchards again composed a very great percentage of the raw product processed, although herring were permitted to be used for this purpose up to December 31 on the west coast of Vancouver island, north of Barclay sound, and in District No. 2. In addition the offal from salmon canneries and freezing plants as well as whale carcasses are used in these operations.

An earnest effort was made by several of the operators to obtain their supply of pilchards in the open seas, instead of waiting for them to enter inlets as has been done heretofore. Fishing outside, however, requires specially equipped boats and unusually strong gear, but due to weather conditions the experiments were found to be unprofitable.

Statement No. 9 shows the total production of fish meal and oil since 1920.

#### MARINE WAYS AND WAREHOUSE

The department maintains a well-equipped machine shop and ways on the Fraser river at Poplar Island, New Westminster, where many of the departmentally owned boats receive their annual overhaul and are repaired from time to time during the season. It has been found that the facilities so provided have been the means of saving a good deal of money and have increased the efficiency of the service generally. The patrol boats of the Fraser river use the floats at this station and some others from outlying points are also laid up there when out of commission. This, of course, does not apply to the boats of the northern district, which are brought at the end of the season to Digby island at Prince Rupert. Unfortunately, however, at that point there is no adequate accommodation provided for the protection of the department's valuable fleet, and it is hoped that in the very near future proper facilities will be provided.

#### UNNATURALIZED WHITE RESIDENT FISHERMEN

The department's policy which permits white immigrants who have recently come to the country to take out fishing licenses on the production of the proper evidence to the effect that they are in fact permanent residents and will become naturalized just as soon as the law will permit has resulted in, up to the end of 1927, the issuing of 1,046 such licenses, to 940 fishermen.

#### SPORT FISH

The protection of the sport fish, particularly in the interior of the province, is becoming more difficult each year, due largely to the opening up of good motor roads and the resultant increased tourist traffic in the province. With

the machinery at present available, it is absolutely impossible to adequately protect the fish of the interior waters. The proper organization in the way of overseers or guardians, or both, will undoubtedly materially increase the expense of the British Columbia administration, but such additional expense is absolutely imperative if this valuable asset is to be properly conserved.

#### SPECIAL INQUIRY INTO SALMON FISHING CONDITIONS

As a result of conditions brought about by the excessive amount of salmon fishing gear in the water which caused very necessary curtailment of fishing operations for purposes of conservation, the industry, both fishermen and canners, felt that conditions warranted approaching the department with a view to the appointment of a commission to inquire into the British Columbia situation. It was contended that under the conditions existing salmon fishing operations were proving unprofitable to both fishermen and canners.

It was felt, however, by the department that the time was not opportune for the appointment of a commission, particularly in view of the fact that the federal authority with regard to control of certain branches of the fishing industry had been challenged and the question referred to the Supreme Court of Canada for an opinion. It was decided, however, that as the Director of Fisheries was on the coast at the time, he should arrange for public hearings with a view to enabling all those interested to express their views on certain specific proposals which were finally submitted by certain canners who approached the department on behalf of the Salmon Canners' Association.

The delegation composed of fishermen and canners who approached the department explained that, while it might be expected that those engaged in fishing operations should remedy the situation themselves, they found it impossible under the existing regulations to agree on any plan, but expressed confidence that in the light of the season's experience the fishermen, as well as canners, would favour certain modifications in the regulations which, while not involving refusal of licenses to any, would enable the industry to do its utmost, at its own instance, to make reasonable reductions in the amount of equipment used, and otherwise reduce the cost of operations.

The delegation felt that this could be done if the regulations included provisions to the following effect:—

- (1) That the coast of British Columbia be divided into fishing areas of such proportion as to support the plants in these areas.
- (2) That the maximum amount of gear to be fished in each area before additional weekly or annual closed season would be added be stated in the regulations.
- (3) That salmon—except the catches of trollers or fish for export, fresh fish markets or cold storage—be processed in the area in which it is caught.

With a view to obtaining the opinion of the industry generally on the above three proposals, meetings were held at Prince Rupert, Alert Bay, Campbell River, Union Bay, Nanaimo, Port Alberni, Pender Harbour, Vancouver, and New Westminster.

No definite action was possible, however, by the department before the expiration of the calendar year, in view of the fact that the Prince Rupert fishermen asked for more time for consideration of the several proposals.

#### TAGGING OF SALMON

The information which is obtainable from the tagging of salmon is of such immense importance that the program should, without delay, be extended to cover all varieties of salmon and at as many favourable points as it is possible

to obtain the fish. Each season the necessity for obtaining such information becomes more apparent, and the result of a really comprehensive system as above suggested would enable conservation measures to be taken in a much more intelligent manner. The importance of this matter cannot be too strongly stressed.

## STAFF

During the year the following was the personnel employed in the administration of the fisheries in the province of British Columbia:—

Inspection and clerical staff.....	28
Overseers.....	18
Guardians.....	36
Patrolmen and boat crews.....	214
Fish culture.....	73
	<hr/>
	369

## REPORT ON SALMON SPAWNING AREAS, BRITISH COLUMBIA

*Queen Charlotte Islands*

At Masset inlet, Naden harbour and the north coast of Graham island generally, the water conditions when the salmon arrived were favourable. The sockeye run, which in this area is an early and small one, was normal and appeared to reach the spawning grounds somewhat earlier than usual. This being the off year for pinks there was no showing of this variety. Chum salmon were late in arriving which fact, added to the unusual early closing of the commercial fishing, enabled very satisfactory quantities to reach the spawning grounds.

At Skidegate inlet several of the streams were fairly well seeded, but on the whole the quantities reaching the spawning areas were not satisfactory.

Along the east coast of the Queen Charlotte islands south of Skidegate, the supply of salmon reaching the spawning areas was, in the opinion of the inspecting officer, not sufficient.

*Nass River Area*

The annual inspection of the Meziaden watershed of the Nass river revealed evidence of a very small run of early sockeye. A late run, however, materialized, which, with the favourable water conditions present, will provide a fair natural seeding, but it is doubtful whether it will offset the lack of early salmon.

The spring salmon run also was not up to the average and the fish appeared to be smaller in size than usual. Cohoes had not arrived in appreciable numbers at the time of the inspection. Climatic conditions appeared to be about one month later than usual.

The pink run to the lower areas of the system was very light.

*Skeena River Area*

The examination of the Babine Lake district, which is the main spawning area of the Skeena watershed, showed quite a good supply of sockeye. At Morrison Creek, for instance, on which the hatchery is situated, the run was estimated by the superintendent to be 25 per cent greater than that of the previous year. An examination of the sockeye streams tributary to Babine lake showed conditions on the whole quite satisfactory.

At Lakelse Lake conditions were found to be far from satisfactory and it was not possible to obtain sufficient sockeye eggs to fill the hatchery. It is difficult to account for this situation unless it was due to the particular tribe of salmon heading for Lakelse arriving in Chatham sound and Skeena river at the height of the fishing season and being mostly caught. From conditions found on the Lakelse spawning grounds in the brood years the small return was not expected.



In the case of pink salmon the catch in the river and Chatham sound was very considerably below normal. An examination of the spawning grounds in the Babine river, however, which is probably the most important area from the standpoint of this variety, showed them to be unusually well seeded with pinks. The guardian states that while the usual portion of the river used by these salmon was probably more heavily seeded than during the last few years, additional areas of the river were also heavily seeded so that the run of pinks to the Lower Babine during 1927 was the greatest that he had ever known.

The supply of cohoes was well up to the average.

#### *Central Area*

The sockeye running to this area are mostly of the creek variety utilizing the numerous small streams which drain a limited area. During the period of dry weather these streams dry very rapidly and conditions as a result for fish ascending to the spawning grounds are very difficult, and at times impossible, necessitating drastic regulations to prevent the runs being depleted.

The overseer reports that the sockeye run on the whole has been satisfactory, and that the coho streams were well seeded. Due probably largely to the unusual amount of close period enforced during the year, very considerable quantities of chums were enabled to ascend the streams. In the case of pink salmon however, the supply was very disappointing and few streams only can be said to be well seeded. This condition will require special attention during the fishing season of 1929.

#### *Bella Coola and Kimsquit*

The run of sockeye to the Bella Coola portion of the district was again good during the year. It was later than usual, however in reaching the lakes. The supply each year since 1924 has been good. At Kimsquit, however, the sockeye run is reported as having been considerably below average. The spawning areas were not well seeded.

The run of springs was late at Bella Coola and although there was not a large quantity caught, yet there was a very satisfactory escapement to the spawning grounds. This condition was no doubt partly due to the early closing of fishing. The supply of this variety in the Kimsquit river was not satisfactory.

It is estimated that the supply of coho ascending the rivers at the head of Bella Coola and Kimsquit was not sufficient to adequately seed the respective spawning areas.

In the case of pinks there was a reasonably good showing at the head of Burke channel, but an inadequate supply at the head of Dean.

The run of chums was not good to either of these points.

The fluctuation in the supply of salmon at these two points is affected very materially by unusually severe freshets which cause the rivers to frequently change their course and which often scour out the spawning grounds.

The conditions in the lower portions of both Burke and Dean channels are such as will necessitate some further action looking to conservation.

#### *Rivers Inlet Area*

This is primarily a sockeye area and the usual inspection justifies the statement that the spawning grounds were well seeded with this variety. In spite of the intensive fishing in the Inlet the run is being satisfactorily maintained and there would appear to be no reason to fear depletion.

#### *Smiths Inlet Area*

There appears to be no doubt but that the supply of sockeye reaching the spawning grounds in Smiths inlet during the season has been eminently satisfactory and with the present fishing regulations and boundaries there should be no fear for future supplies.

*Alert Bay District*

The main sockeye areas are the Nimpkish river and Glendale cove. Notwithstanding the intensive fishing by purse-seines and drag-seines at Nimpkish restrictions in force each year are resulting in large quantities reaching the spawning grounds. The season under review was no exception and although the pack of this variety amounted to approximately 9,000 cases an abundance of fish safely passed up the river. At Glendale cove the supply was not so satisfactory.

Water conditions in the area generally resulted in the streams being sufficiently high to permit all varieties of salmon to pass up to the spawning grounds instead of being delayed at the mouths of creeks. The runs of pinks on the whole were light. Conditions, however, were better in the case of coho and also the chum salmon. The early closing undoubtedly had the effect of permitting an abundant supply of both these varieties reaching their spawning grounds.

*Quathiaski District*

This is not an important sockeye area although there is a run to Phillips arm, Port Neville and another to Hayden bay, the latter being composed of very small fish, however. The supply was light. The run of cohoes cannot be said to be satisfactory, although good at Orford river at the head of Bute inlet where the gillnet fishermen had a successful season. The supply of pinks at Orford river is reported by the overseer as the best he has seen in that district. In other portions of the area, however, the supply of this variety was not satisfactory.

To such rivers as the Homalko, Orford, Village Bay, Hayden Creek, the supply of chums was very good. In other portions of the district, however, conditions were not satisfactory.

*Comox District*

This is not a sockeye area. In the case of the cohoes, the spawning grounds were not well seeded with the exception of the Puntledge and Tsolem rivers. This was the off year, however, for pinks and no run of any material size was expected. Quite a satisfactory supply of springs passed up the Puntledge river and the fishway in the stream at the outlet of Comox lake appeared to be no obstacle to the ascent. The chum supply was good in the Puntledge river, Waterloo creek, Cooks creek, Big Qualicum river and Englishmen's river.

It is expected that the new regulations which will be enforced in the Comox area will result in a greater supply of the several varieties reaching the spawning grounds.

*Pender Harbour District*

This is not a sockeye area apart from a small run proceeding to Saginaw which apparently is being well maintained. The supply of pinks on the whole was good and there would appear to be no doubt but that a portion of the large run coming north through Puget sound in the odd number years proceeds to the Pender Harbour district, particularly to the vicinity of Jervis inlet. The overseer observes that at Toba inlet, Theodosia arm and in two of the streams in Jervis inlet the run can be said to have been far better than any since 1924, which is the year he assumed patrol of the district. Owing to the continued heavy rains throughout the season the pinks were able to ascend the streams easily and the catches by the purse-seines were lighter than usual, as the fish did not school up at the mouths of the creek as is the case in the dry weather.

The run of chums on the whole was also a good one and the high water in the streams permitted an abundance of fish to reach the spawning grounds. This also applies to the cohoes.



*Nanaimo District*

The inspecting officer reports that, generally speaking, the run of cohoes and chums was better than any season during the past ten years. Heavy runs and the early closing regulations permitted large quantities to ascend to the spawning grounds. The supply of spring salmon and steelhead trout was also satisfactory.

*Cowichan District*

The supply of spring salmon running to the Cowichan river was below normal. This fact is attributed in part at least to the water conditions in the river four years previously, when the Cowichan and all streams in the district were abnormally low. In that year the superintendent of the Cowichan Lake hatchery was obliged to come down as far as Duncan for spring salmon eggs as no fish could pass above Skutz falls. During the next three years however, the run of springs has been good and the water conditions also satisfactory.

The supply of the several varieties of sporting fish is reported as having been excellent.

*Sooke District*

A satisfactory supply of chums and cohoes reached the several streams in this area and were able to pass up to the spawning grounds. The local guardian reports the supply as being heavier than for the past three or four seasons.

*Alberni District*

This area includes Stamp river and Sproat river, Anderson river in Barclay sound, and Hobarton and Cheewat rivers in Nitinat inlet, all of these being frequented by sockeye. The overseer reports the season as being a banner one for the district. 79,069 sockeye were canned and some 12,000 fish of this variety were shipped to Vancouver for processing. Undoubtedly this desirable condition has been brought about by the efforts of the department in the way of fishery regulations, coupled with fish culture. The runs of sockeye to the Sproat and Stamp rivers has been increasing very materially of recent years and in view of the fact that an adequate fishway has been installed at the Stamp River falls there is every reason to believe that there will always be a very good run of this variety to the district. The supply reaching Anderson lake where the hatchery is situated was estimated by the superintendent at 80,000 spawning fish, a most encouraging figure.

The run of spring salmon was the best in years, the supply of cohoes also being good. In the case of the chums, in spite of the season being closed two weeks earlier than usual the record total of 1,155,569 fish was taken. The streams were in good condition and the salmon had no difficulty in ascending to their spawning grounds.

The streams flowing into Nitinat inlet were generally speaking well supplied with salmon.

*Clayoquot Sound*

The main stream is the Kennedy river draining Kennedy lake, where a hatchery is maintained. For some reason or other there was a small supply of sockeye on the spawning grounds. The pack taken by the several seines operating in Clayoquot sound opposite Kennedy river accounted for a little over 4,000 cases which is an average pack for the district. It would appear that four years hence unusual methods must be taken to further protect this run.

Practically all the streams in the Clayoquot sound area were heavily seeded with both cohoes and chums. Altogether it would appear to have been an eminently satisfactory season from the standpoint of spawning fish. The overseer comments that the quantity of chums was the largest ever observed in that district. This is not a pink area.



*Nootka District*

The fall varieties are the only ones frequenting this area apart from a small run of sockeye to Gold river. The supply of springs on the spawning grounds of the Burman and Gold rivers was satisfactory. Other portions of the district, however, were not so good. The coho supply was not up to average apart from such points as Deserted creek, Tahsis river and Queens cove.

In the case of chums the run was a heavy one to practically all streams. This is not a pink area.

*Kyuquot Sound District*

No sockeye run to this district apart from the stream at the head of Ou-Ou-Kinch inlet where a very fair run was observed between May and August, and Easy creek, where only a few were observed.

The supply of spring salmon was considerably below normal and unsatisfactory. The same might be said of the coho. In the case of chums, however, a good supply reached the spawning grounds. This is not a pink area.

*Quatsino District*

There are no sockeye in this area apart from a few of the early creek variety. The supply of cohoes was only fair. The chums, however, although light at first, finally developed into a good run, which owing to the high state of the streams, and the early closing of fishing were able to reach their spawning grounds.

*Fraser River Watershed*

The officers in the Stuart lake area, while not reporting any large body of sockeye, undoubtedly observed a quantity which was a fair average of the last five years. The greatest number appear to have passed up to Trembluer and Takla lakes, tributary to the Stuart.

In the Francois Fraser lake system there have been very few sockeye observed for years, and the officer reporting for the season under review mentions schools of from four to fifty at separate points. The number can be considered a fair average.

In the Quesnel lake system conditions were found to be better than usual. During the past two or three years indications have justified the conclusion that the quantity of spawning fish was increasing, although compared with the huge runs of the big years previous to the slide at Hells Gate, the quantities observed in recent seasons are infinitesimal. However, during the fall of 1927 our inspecting officer, instead of reporting schools of twenty, thirty and forty as reported during previous years, observed as many as 3,000 sockeye in one hole in the Horsefly river in the vicinity of Black creek, some thirty miles above Quesnel lake. He estimates that he personally saw between six and seven thousand fish during his inspection which is a much more encouraging report than has been received since the big runs.

The Chilco area shows no improvement over recent years. The Shuswap area again received a very good supply of spawning sockeye in the Adams and Little river districts. The run was again late and while not as large as the preceding year was most encouraging. No sockeye were observed above the Adams river. Indications along the shores of the south Thompson river were better than for a good many years, one large ranch owner stating that it was the first season for a considerable number of years that he has been obliged to prevent his hogs approaching the river owing to the fact that there were such large quantities of dead salmon along the shores.

At Bridge River canyon in the Fraser the guardian reports that no unusually large run of sockeye passed through his area, notwithstanding the large quantities which have been observed from time to time until quite late in the season at Hells Gate. The fishway which was recently improved is proving an entire success.

At Hells Gate sockeye salmon were observed on the 14th of July for the first time, this season, and from time to time arrived in considerable quantities

until very late in the season—in fact sockeye were observed below Hells Gate as late as December 14. There appears to be no reason to doubt that these all passed up beyond Hells Gate with possibly the exception of the very latest runs which arrived in a very advanced condition and appeared to be very weak. Although an unusually careful watch was maintained there was no evidence found to warrant the statement that the conditions at the Gate obstructed the passage of fish at any time permanently. As has always been the case, there are hours or days when, owing to the stage of the water at that time, salmon are delayed but they have finally succeeded in passing through. It will be remembered that in the fall of 1926 a similar run of late sockeye in an advanced stage reached Hells Gate but succeeded in passing through and were later observed on the spawning grounds of the Adams and Little Rivers in the Shuswap area.

It has been suggested that the unusually large quantity of sockeye observed in Kakawa lake and creek which are tributary to the Fraser through the Coquihalla were some which had found conditions at Hells Gate too difficult and returned to the Coquihalla exhausted. As confirmation of this contention it has been pointed out that 99 per cent of this variety observed in the Kawkawa lake district were females. The suggestion is that the males, being stronger than the females, were able to make the ascent, whereas the females were obliged to back down to the Coquihalla. This suggestion is not concurred in by those who have had most experience with fish culture operations, and it has always been understood that the sockeye will continue to battle their way up stream until they either succeed or die. An effort is being made to determine just what merit there is in the contention that this year's Kawkawa fish are those which had returned from Hells Gate. Additional weight is given to this suggestion as it has been stated that the sockeye which appeared this year at Kawkawa lake are from a pound to a pound and a half heavier than the native fish.

The Cultus and Chilliwack lake system showed an unusually large run of sockeye, particularly the former, where over 80,000 spawning fish were passed over the hatchery fence, all being allowed this year to spawn naturally. The same satisfactory conditions existed in this locality with regard to pinks, although the supply of chums and cohoes was not so good.

At Harrison lake there was no large quantity of sockeye observed although nearly four million eggs were obtained from those arriving in the vicinity of the hatchery. These eggs were transferred to Cultus lake to be brought back when eyed and planted in the Morris creek district. At Morris creek the run was disappointing. On the other hand there was a large run of pink salmon in the Harrison district and a very satisfactory supply of springs.

In the Pitt lake district the superintendent of the hatchery reports that the run of sockeye to the system was at least 25 per cent larger than for many years, and all the spawning grounds were well seeded. Conditions were not so satisfactory, however, in the case of the other varieties of salmon.

In the Birkenhead system where a hatchery is maintained, there was the usual large run of sockeye and there were no indications which would justify anything but optimistic expectations for the future.

In the Howe sound and Burrard inlet areas there was a very large run of pink salmon, unusually large for even the big year. The run proceeding to Indian river was not fished after entering Burrard inlet. The spawning grounds in both areas are heavily seeded. The supply of chums and cohoes was a fair average of recent years, the chums particularly being very numerous on the spawning areas at the head of Howe sound, due no doubt largely to the early closing of the fishing.

The run of pink salmon generally to the Fraser river, Burrard inlet and Howe sound, also Jervis inlet areas, which mostly passes through the straits of Juan de Fuca, was an excellent one.





1907	58	.....	.....	.....	314,074	23,159	.....	2,839	.....	683	87,900	118,704 (Pks. & Ch.)	547,459
1908	52	.....	.....	.....	355,023	25,433	.....	2,731	.....	1,137	81,917	76,448 (Pks. & Ch.)	542,689
1909	72	.....	.....	.....	840,441	18,218	.....	799	.....	.....	61,918	46,541 (Pks. & Ch.)	967,920
1910	58	.....	.....	.....	565,915	19,313	.....	9,476	.....	140	74,382	34,613	762,201
1911	59	.....	.....	.....	383,509	38,751	.....	9,705	.....	.....	119,80	305,247	948,965
1912	57	3,640	.....	139	444,762	62,345	.....	18,09	.....	.....	165,309	247,743	996,576
1913	78	4,782	.....	74	973,178	37,433	.....	3,616	.....	.....	69,822	192,887	1,353,901
1914	63	4,857	.....	61	536,696	32,903	.....	16,420	.....	.....	120,201	250,340	1,111,039
1915	63	4,951	.....	107	476,042	51,734	.....	6,370	.....	2,927	146,956	367,352	1,133,381
1916	72	4,600	.....	115	214,789	51,231	.....	15,495	.....	5,986	183,623	280,644	995,055
1917	94	5,286	1,370	99	339,848	48,630	.....	27,646	11,740 B.B.&S.H.	.....	157,589	496,759	1,557,485
1918	88	5,073	1,786	122	276,459	65,535	.....	Pk. & Wh.	15,916 B.B.&S.H.	.....	191,038	527,745	1,616,157
1919	82	4,598	2,260	139	369,445	73,179	9,077	18,295	24,338	4,493	175,670	346,639	1,393,156
1920	65	4,761	1,855	45	351,405	95,983	8,441	13,877	8,031	2,395	101,972	520,836	1,187,616
1921	56	4,777	1,452	35	163,914	36,725	6,061	6,966	7,000	1,270	117,288	192,905	603,548
1922	64	4,491	1,513	36	299,614	21,163	11,913	6,520	6,431	1,657	102,845	581,979	1,290,326
1923	61	3,957	1,446	223	334,647	17,539	4,858	4,745	7,097	1,760	112,044	440,93	1,341,677
1924	62	3,696	1,553	242	369,601	18,741	2,591	6,460	4,267	1,843	115,944	657,561	1,747,505
1925	65	4,225	1,821	329	392,643	39,142	4,419	29,938	10,675	1,996	188,505	445,400	1,720,622
1926	76	4,750	2,416	445	336,995	41,276	4,177	23,736	19,445	2,165	162,449	772,993	2,035,198
1927	76	5,637	3,093	46	308,032	34,029	8,819	16,129	20,820	1,746	161,148	247,617	1,360,449

NOTE.—Licenses issued 1923, 1924, 1925, 1926 and 1927 include transfers from one district to another.  
 \*For the years 1876 to 1901 and 1903—particulars of varieties not available—practically all sockeye.

## PACK OF CANNED SALMON ON THE NAAS RIVER—\*1876 TO 1927

Year	Num- ber of can- neries oper- ated	Number of salmon licenses issued				Sockeye	Red Spring	Pink Spring	White Spring	Blue- backs	Steel- heads	Cohoos	Pinks	Chums	Totals
		G.N.	Troll	P.S.	D.S.	T.N.									
1876															
1877															
1878															
1879															
1880															
1881	1														7,700
1882	2														16,100
1883	2														20,383
1884	1														8,500
1885															
1886															
1887															
1888	1														
1889	3														
1890	3														19,410
1891	3														23,903
1892	3														10,323
1893	3														25,434
1894	1														15,190
1895	1														19,587
1896	1														19,550
1897	1														14,649
1898	1														20,847
1899	1														18,953
1900	1														19,443
1901	1														18,238
1902	2														14,790
1903	1														23,318
1904	2														12,100
							20,953	(Other varieties:	2,365						19,085
							15,000	2,357	(Red & Wh. Spr.)			1,697	31		







1909.....	12	87,901	11,727	742	12,249	28,120 (Pk. & Ch.)	140,739
1910.....	12	187,246	9,546	239	11,531	13,473	222,035
1911.....	12	131,056	15,514	2,428	23,376	81,956	254,410
1912.....	12	92,438	19,332	4,501	39,835	97,588	254,258
1913.....	13	52,927	23,250	3,186	18,647	66,045	164,055
1914.....	13	130,166	11,529	211	16,378	71,021	237,634
1915.....	13	116,553	15,059	204	32,190	107,578	279,161
1916.....	14	60,923	18,372	2,561	47,409	73,029	223,158
1917.....	15	65,760	13,586	2,699	38,456	148,319	292,219
1918.....	15	123,322	16,013	6,828	38,759	161,727	374,216
1919.....	14	184,945	19,661	2,656	36,559	117,303	398,877
1920.....	15	90,869	37,403	3,123	18,068	177,679	334,392
1921.....	13	40,018	18,599	445	45,033	124,457	234,765
1922.....	13	100,615	7,080	1,805	24,673	203,555	362,035
1923.....	13	131,731	8,863	418	31,967	145,973	338,863
1924.....	13	144,732	9,511	1,301	26,907	181,338	390,967
†1925.....	13	77,785	17,811	2,457	38,029	127,226	76,352
†1925.....	15	81,149	19,185	2,603	39,168	130,083	348,866
†1926.....	15	82,307	17,896	1,750	30,153	170,586	350,804
†1926.....	15	82,357	17,896	1,750	30,209	210,064	407,533
†1927.....	13	83,988	13,595	1,609	25,209	38,903	177,173
†1927.....	13	83,984	14,856	1,609	25,623	38,761	187,639

\*Approximately.

†Pack of fish caught at Skeena River regardless where canned.

‡Pack at Skeena River regardless where caught.

Note.—Licenses issued 1923, 1924, 1925, 1926 and 1927 include transfers from other districts.

\*For the years 1877 to 1903. Particulars of varieties not available—practically all sockeye.







Year	Number of canneries operated	Number of salmon licenses issued					Sockeye	Red Spring	Pink Spring	White Spring	Blue-backs	Steel-heads	Cohoos	Pinks	Chums	Totals
		G.N.	Troll	P.S.	D.S.	T.N.										
1876	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,847
1877	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64,387
1878	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	105,101
1879	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50,490
1880	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42,155
1881	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142,516
1882	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	199,104
1883	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	109,701
1884	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38,437
1885	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	89,617
1886	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99,177
1887	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	130,088
1888	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76,616
1889	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	303,875
1890	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	241,889
1891	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	178,954
1892	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79,715
1893	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	457,797
1894	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	363,967
1895	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	400,368
1896	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	356,984
1897	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	860,459
1898	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	256,101
1899	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	510,383
1900	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	316,522
1901	49	3,832	.....	.....	.....	.....	293,477	.....	.....	.....	.....	.....	.....	.....	.....	990,313
1902	42	2,685	.....	.....	.....	.....	204,809	.....	.....	.....	.....	.....	.....	.....	.....	327,095
1903	35	3,101	.....	.....	.....	.....	72,688	.....	.....	.....	.....	.....	.....	.....	.....	237,125
1904	23	2,224	.....	.....	.....	.....	837,489	.....	.....	.....	.....	.....	.....	.....	.....	128,903
1905	38	2,770	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	877,136

Other Varieties: 33,618  
 2,084: (Red and White Spring)  
 9,482: (Red and White Spring)

1906	24	1,746	183,007	6,503	1,020	34,413	15,543 (P.k. & Ch.)	240,486
1907	18	1,726	59,815	3,448	557	35,766	63,530 (P.k. & Ch.)	163,116
1908	16	1,374	63,126	1,427	18	24,198	415 (P.k. & Ch.)	89,184
1909	38	2,688	542,248	1,428	.....	21,540	1,987 (P.k. & Ch.)	567,203
1910	21	1,577	133,045	1,018	8,925	27,855	128	223,148
1911	15	1,396	58,487	7,018	6,751	39,740	142,101	301,344
1912	15	1,430	108,784	14,655	8,373	38,674	574	173,921
1913	35	2,560	684,596	3,573	49	11,648	9,973	732,059
1914	20	2,656	185,483	9,485	14,000	38,639	6,057	328,390
1915	22	2,616	89,040	15,388	3,532	34,114	128,555	289,119
1916	21	2,240	27,394	11,096	9,217	24,580	840	106,440
1917	29	2,626	123,614	10,197	18,916	25,895	134,442	377,988
1918	18	1,582	16,849	15,192	24,274	40,111	18,388	86,215
1919	14	1,337	29,628	14,519	3,592	39,253	39,363	158,718
1920	11	1,288	44,598	19,961	2,188	22,934	12,839	132,860
1921	13	1,437	35,900	11,360	5,480	29,978	8,178	103,917
1922	10	1,596	48,744	10,561	3,867	23,587	29,578	137,482
1923	11	964	29,473	3,854	3,615	20,173	63,645	224,637
1924	9	969	36,200	2,982	4,056	21,935	31,968	209,050
1925	10	969	31,523	7,335	25,482	36,717	99,800	272,993
1926	10	1,063	83,589	11,774	20,130	21,787	32,256	273,134
1927	10	1,249	57,085	6,553	10,493	24,079	102,535	280,013

None.—Licenses issued 1923, 1924, 1925, 1926 and 1927 include transfers from other districts.

\*For the years 1876 to 1901, particulars of varieties not available—practically all sockeye.



## STATEMENT No. 6

## PACK OF CANNED SALMON OF PUGET SOUND FROM 1887 TO 1927

Year	Number of canneries operated	Spring	Sockeye	Cohoe	Chum	Pink	Steel- head	Total
1887.....		Partic	ulars of vari	eties not a	available.			22,000
1888.....	4		"	"	"			21,975
1889.....	2	240		7,480	1,145	2,890		11,674
1890.....	1	1,000		3,000	4,000			8,000
1891.....	2	382	5,538	5,869	3,093	5,647		20,529
1892.....	2	86	2,954	7,206	16,180			26,426
1893.....	3	1,200	47,852	11,812	11,380	17,530		89,331
1894.....	3		41,781	22,418	22,152	9,049		95,400
1895.....	7	1,542	65,143	50,865	38,785	23,633		179,968
1896.....	11	13,495	72,979	82,640	26,550			195,664
1897.....	12	9,500	312,048	91,900	23,310	57,268		494,026
1898.....	18	11,200	252,000	98,600	38,400			400,200
1899.....	19	24,364	499,646	101,387	31,481	252,733		919,611
1900.....	19	22,350	229,800	128,200	89,100			469,450
1901.....		Partic	ulars of vari	eties not a	available.			1,380,590
1902.....	21	30,049	372,301	85,817	93,492			581,659
1903.....	22	14,500	167,211	103,450	12,001	181,236		478,488
1904.....	13	14,441	109,264	118,127	49,656			291,488
1905.....	24	1,804	825,453	79,335	41,057	70,992		1,018,641
1906.....	16	8,139	178,748	94,497	149,218			430,602
1907.....	14	1,814	93,122	119,372	50,249	433,423		698,080
1908.....	22	95,210	170,951	128,922	47,607	6,075		448,765
1909.....	11	13,019	1,097,904	143,133	53,688	370,993		1,632,949
1910.....	24	10,064	248,014	162,755	146,942	108		567,883
1911.....	15	21,823	127,761	256,124	104,321	1,046,992		1,557,029
1912.....	20	20,252	184,680	149,727	60,760	700		416,125
1913.....	22	1,234	1,673,099	61,019	56,225	791,886		2,583,463
1914.....	31	26,044	335,230	151,893	278,801	892		792,860
1915.....	41	28,466	64,548	180,783	411,724	583,649		1,269,206
1916.....	32	37,030	84,637	155,832	427,878	1,887		707,278
1917.....	45	57,543	411,538	114,276	216,285	1,124,884		1,921,554
1918.....	32	63,366	50,723	235,860	267,538	6,605	106	624,198
1919.....	35	68,542	64,346	210,883	525,541	421,215	5,076	1,295,626
1920.....	11	25,846	62,654	24,502	48,849	4,669		166,520
1921.....	23	25,567	102,967	89,412	30,831	404,713		653,490
1922.....	16	20,615	48,566	111,711	65,552	2,225		248,729
1923.....	18	15,777	47,402	122,000	97,081	475,849	29	758,138
1924.....	12	19,968	69,369	87,879	134,360	5,945	128	317,649
1925.....	23	28,268	106,064	171,587	41,635	555,848	141	903,543
1926.....	14	27,763	44,569	120,846	112,411	2,125	63	307,778
1927.....	21	43,443	96,343	133,528	37,414	585,506	216	896,450

## STATEMENT No. 8

## STATEMENT OF DRY SALT HERRING PACKS, 1918-1927—BRITISH COLUMBIA

Year	District No. 1	District No. 2	District No. 3		Total
			East Coast	West Coast	
	cwt.	cwt.	cwt.	cwt.	cwt.
1918.....	20,000		109,900	42,710	172,610
1919.....	4,000		43,000	208,058	255,058
1920.....	807	1	176,640	334,720	512,168
1921.....	249		231,240	248,482	479,971
1922.....			297,871	224,897	522,768
1923.....		8,935	250,426	484,681	744,036
1924.....			305,266	548,277	853,543
1925.....		4,120	591,162	487,892	1,083,174
1926.....	11,134	4,192	596,114	327,207	938,647
1927.....	24,380	7,600	542,385	473,825	1,048,190

## STATEMENT No. 9

## PRODUCTION FISH OIL AND MEAL—BRITISH COLUMBIA, 1920-1927

Year	From Pilchards		From Herring		From Whales			From Other Sources	
	Meal and Fer-tilizer	Oil	Meal	Oil	Whale-bone and Meal	Fer-tilizer	Oil	Meal	Oil
	tons	gals.	tons	gals.	tons	tons	gals.	tons	gals.
1920....					503	1,035	604,070	466	55,669
1921....								489	44,700
1922....					326	230	283,314	911	75,461
1923....					485	910	706,514	823	180,318
1924....					292	926	645,657	1,709	241,376
1925....	2,083	495,653			347	835	556,939	2,468	354,853
1926....	8,481	1,898,721	310	13,700	340	666	468,206	1,752	217,150
1927....	12,169	2,673,876	1,838	170,450	345	651	437,967	2,512	375,130

## STATEMENT No. 10

## WHALE CATCH LANDINGS, BRITISH COLUMBIA, 1918 TO 1927

Species	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Sperm.....	All varieties	All varieties	All varieties	No Whaling plants operated 1921	38	94	83	76	80	82
Sulphur.....					4	62	56	29	14	10
Fin.....					94	166	125	135	124	138
Hump.....					50	78	47	40	25	21
Sei.....					1	53	100	68	25	7
Right.....							2		1	
Bottlenose.....						2	1	3		
Gray.....										
Totals.....	500	432	493	.....	187	455	414	351	269	258

## STATEMENT No. 11

## STATEMENT OF FUR SEAL SKINS TAKEN AND LANDED, BRITISH COLUMBIA, 1912-1927

Year	District No. 1	District No. 2	District No. 3	Total
1912....			205	205
1913....		285	119	404
1914....		95	257	352
1915....		39	400	439
1916....		21	138	159
1917....		14	204	218
1918....		78	10	88
1919....		53	17	70
1920....		502	556	1,058
1921....		270	2,079	2,349
1922....		291	639	930
1923....		678	3,746	4,424
1924....		370	1,862	2,232
1925....		810	3,655	4,465
1926....		655	2,169	2,824
1927....		188	1,288	1,476

## STATEMENT No. 13

## STATEMENT OF FISHERY LICENSES ISSUED, BRITISH COLUMBIA, SEASON 1927—WHOLE PROVINCE

Variety of License	Issued			Transfers			Operating			Remarks
	Whites	Indians	Japs	Total	Whites	Indians	Japs	Total	Total	
Salmon Cannery.....	75			75					75	
Salmon Curing.....	35		3	38					38	(1 cancelled)
Salmon Drag-seine.....	31	15		46					46	
Salmon Purse-seine.....	434	48		482	68	5		73	555	
Salmon Trap-net.....	7			7					7	
Salmon Gill-net.....	2,816	1,158	912	4,886	723	34		757	5,643	(6 cancelled)
Salmon Trolling.....	2,193	657	155	3,005	88	1		89	3,094	(1 cancelled)
Salmon Trawl.....	163	13	87	263	2			2	265	
Boats.....	52		17	69					69	
Asst. Salmon Gill-net.....	335	286	490	1,111	3	1		4	1,115	(1 cancelled)
Asst. Salmon Seine.....	1,000	1,156		2,156					2,156	
Capt. Sal. Seine.....	135	279		414	2			2	416	(3 cancelled)
Miscellaneous Cannery.....	10			10					10	
Cod Gill-net.....	31		25	56					56	
Cod Hook and Line.....	247	38	127	412					412	
Crab.....	128	18		146					146	
Grayfish Gill-net.....	13	3	31	47					47	
Grayfish Hook and Line.....	124	4	62	190					190	
Smelt Drag-seine.....	29		3	32					32	
Smelt Purse-seine.....	6			6					6	
Smelt Gill-net.....	20		11	31					31	
Groundfish.....	37		19	56					56	
Oclehan.....	27			27					27	
Perch Drag-seine.....	26	3	1	30					30	
Perch Gill-net.....	4	1		5					5	
Shrimp.....	11		19	30					30	
Reduction Works.....	27			27					27	
Abalone.....	1			1					1	
Rock Cod Seine.....	1			1					1	
Sand Lance.....	1			1					1	
Herring Curing.....	24		1	25					25	
Herring Purse-seine.....	83		3	86					86	
Herring Gill-net.....	22		7	29					29	
Capt. Herring Seine.....	57	16	5	78					78	(2 cancelled)
Totals.....	8,205	3,697	1,990	13,892	886	41		927	14,819	(15 cancelled)

Indian Permits..... 830 (6 cancelled).

Angling Permits..... 45

NOTE.—Herring licenses issued for fiscal year. Above figures up to Dec. 31, 1927.



## FISHERIES BRANCH

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## STATEMENT NO. 14

STATEMENT OF NUMBERS OF DIFFERENT SPECIES OF SALMON AND METHOD OF CAPTURE, REPORTED BY OPERATORS OF SALMON PURSE-SEINES, DRAG-SEINES, AND TRAP NETS AND BY SALMON CANNING, CURING, AND COLD STORAGE ESTABLISHMENTS, OF GILL-NET AND TROLL CAUGHT FISH, BRITISH COLUMBIA, 1920-1927.

—	Sockeye	Springs	Bluebacks	Steelheads	Cohoos	Pinks	Chums	Total
1920								
Troll.....		199,492	72,933	2,581	312,943			587,949
Gill-net.....	3,751,724	398,172	562	40,831	537,925	4,842,499	416,348	9,988,061
Purse-Seines.....	153,380	4,666	753	80	84,383	4,633,505	524,998	5,401,765
Drag-Seines.....	321,894	1,849	1		9,220	347,135	10,281	690,380
Trap-nets.....	54,074	37,578	35,829	931	68,318	381,006	29,528	607,264
Totals.....	4,281,072	641,757	110,078	44,423	1,012,789	10,204,145	981,155	17,275,419
1921								
Troll.....		104,743	81,962	58	248,290			435,053
Gill-net.....	1,863,941	267,355	16,047	37,659	743,882	3,238,196	373,758	6,540,838
Purse-Seines.....	74,578	7,730	230	20	53,224	370,881	830,193	1,336,856
Drag-Seines.....	175,793	11			8,654	124,344	85,577	394,379
Trap-Nets.....	46,016	26,926	176	874	77,658	100,618	2,301	254,569
Totals.....	2,160,328	406,765	98,415	38,611	1,131,708	3,834,039	1,291,829	8,961,695
1922								
Troll.....		99,621	103,883	27	235,499			439,030
Gill-net.....	3,361,516	235,493	3,397	26,412	687,780	5,124,904	673,921	10,113,423
Purse-Seines.....	250,238	2,948	1,220	25	206,094	5,445,975	2,498,036	8,404,536
Drag-Seines.....	310,946	9			16,850	139,561	5,159	472,525
Trap-Nets.....	36,534	35,157	517	1,204	137,345	5,300	3,130	219,187
Totals.....	3,959,234	373,228	109,017	27,668	1,283,568	10,715,740	3,180,246	19,648,701
1923								
Troll.....		42,037	115,850	5	188,341			346,233
Gill-net.....	4,004,378	273,813		41,305	530,198	4,098,494	858,433	9,806,621
Purse-Seines.....	248,003	2,175	3,342	16	223,599	3,484,315	4,000,504	7,961,954
Drag-Seines.....	183,594				9,294	150,071	5,977	348,936
Trap-Nets.....	37,961	24,965		1,650	176,207	184,126	42,604	467,513
Totals.....	4,473,936	342,990	119,192	42,976	1,127,639	7,917,006	4,907,518	18,931,257
1924								
Troll.....		59,265	73,086	90	151,376			283,817
Gill-Net.....	4,252,829	228,924		62,680	515,726	3,583,335	1,587,538	10,231,032
Purse-Seines.....	405,798	2,530		1,251	172,041	8,137,898	4,773,994	13,493,512
Drag-Seines.....	268,483	2,122			15,233	14,451	11,187	311,476
Trap-Nets.....	56,123	13,005		1,649	149,220	18,711	15,103	253,811
Totals.....	4,983,233	305,846	73,086	65,670	1,003,596	11,754,395	6,387,822	24,573,648
1925								
Troll.....		132,136	179,160	313	318,852			630,461
Gill-Net.....	4,307,852	498,032		31,571	874,972	3,531,290	1,397,519	10,641,236
Purse-Seines.....	452,766	6,851		1,618	426,220	3,706,668	5,255,623	9,849,746
Drag-Seines.....	165,023			1	6,804	16,369	8,172	196,369
Trap-Nets.....	63,875	29,529	629	874	142,488	379,331	53,440	670,166
Totals.....	4,989,516	666,548	179,789	34,377	1,769,336	7,633,658	6,714,754	21,987,978
1926								
Troll.....		135,246	328,076	859	397,094			861,275
Gill-Net.....	3,634,337	320,962	13	79,179	482,579	2,803,151	1,111,695	8,431,916
Purse-Seines.....	403,047	4,357	3,909	248	464,211	10,770,891	6,129,410	17,776,073
Drag-Seines.....	156,959	3,250			5,825	6,530	1,369	173,933
Trap-Nets.....	38,080	26,105	3,864	399	94,588	23,353	40,961	227,350
Totals.....	4,232,423	489,920	335,862	80,685	1,444,297	13,603,925	7,283,435	27,470,547
1927								
Troll.....		294,325	341,999	1,902	430,601	5,684	4,113	1,078,624
Gill-net.....	3,562,885	275,158		77,311	520,229	2,392,434	516,604	7,344,621
Purse-Seine.....	391,222	14,654	21,479	1,051	339,766	1,515,984	4,817,537	7,101,693
Drag-Net.....	67,220	2		3	1,490	212	6	68,933
Trap-Nets.....	50,781	30,148	602	1,268	91,469	240,281	8,492	423,041
Totals.....	4,072,108	614,287	364,080	81,535	1,383,555	4,154,595	5,346,752	16,016,912

## APPENDIX No. 2

## REPORT ON THE WORK OF THE BIOLOGICAL BOARD FOR 1927

By J. J. COWIE, *Hon. Secretary-Treasurer*

The Board has charge of and controls the work at the scientific stations, which are located at St. Andrews, N.B., Halifax, N.S., Nanaimo, B.C., and Prince Rupert, B.C.

It meets once a year or oftener at such times and places as may be found necessary. A committee known as the Executive Committee supervises and carries out the undertakings involved in the policies formulated by the board. Sub-committees on the Atlantic and Pacific coasts have immediate supervision under the central executive of the activities of the board.

## BIOLOGICAL STATION AT ST. ANDREW'S, N.B.

The following is a list of the investigators at this station and the work on which they were engaged:—

- Mr. W. R. Sawyer, Queen's University: "Effect of ultra-violet radiation on eggs and larvæ of fishes."  
 Dr. A. Willey, McGill University: "Copepoda of the St. Croix estuary,"  
 Dr. C. C. Benson, University of Toronto: "Chemistry of fish muscle."  
 Dr. A. H. Gee, Yale University: "Bacteria concerned in haddock spoiling."  
 Mr. A. F. Chaisson, Harvard University: "Effect of extreme salinities on fishes."  
 Dr. Jan Jansen, (University of Oslo, Norway), University of Chicago: "Nervous system of the Hagfish (*Myxine*)."  
 Mr. C. R. K. Allen, Dalhousie University: "Examination of test blocks for marine borers,"  
 Prof. H. Wasteneys, University of Toronto: "Biochemical problems."

The complete list of the scientific investigators and the periods spent by them at the station this season is as follows:—

- Mr. C. R. K. Allen, Dalhousie University; August 31 to September 16.  
 Prof. B. P. Babkin, Dalhousie University; June 28 to August 27.  
 Miss Helen I. Battle, University of Western Ontario; June 15 to September 2.  
 Dr. C. C. Benson, University of Toronto; July 12 to August 6.  
 Mr. N. J. Berrill, University of London (Eng.); June 13 to September 2.  
 Miss Mabel A. Borden, Dalhousie University; May 21 to August 9.  
 Mr. A. F. Chaisson, Harvard University; July 7 to September 12.  
 Miss Viola M. Davidson, High School of Commerce, Toronto; June 26 to August 23.  
 Dr. A. H. Gee, Yale University; July 14 to September 8.  
 Mr. N. E. Gibbons, Queens University; June 23 to September 3.  
 Prof. J. N. Gowanloch, Dalhousie University; May 21 to September 13.  
 Prof. H. B. Hachey, University of New Brunswick; June 1st to September 10.  
 Mr. W. S. Hall, University of Toronto; May 25 to September 10.  
 Dr. Jan Jansen (University of Oslo, Norway), University of Chicago; August 25 to August 31.  
 Prof. A. B. Klugh, Queen's University; June 3 to September 2.  
 Miss Margaret E. MacKay, Dalhousie University; June 25 to August 26.  
 Mr. H. S. Morton, Dalhousie University, June 25 to July 18.  
 Miss E. C. Odell, Macdonald College, McGill University; June 8 to September 17.  
 Miss J. R. Pantou, University of Toronto; June 3 to August 6.  
 Mr. R. E. Paterson, Queen's University; June 22 to August 28.  
 Miss C. E. Rice, Queen's University; June 30 to September 3.  
 Mr. A. D. Ritchie, University of Manchester (Eng.); June 13 to September 22.  
 Mr. W. R. Sawyer, Queen's University; July 2 to September 10.  
 Dr. W. W. Simpson, University of Toronto; June 4 to August 13; August 30 to September 15.  
 Miss C. M. Spence, Queen's University; June 30 to September 3.  
 Mr. W. E. Taylor, Malvern Collegiate, Toronto; June 25 to August 28.  
 Prof. H. Wasteneys, University of Toronto; July 21 to July 27.  
 Prof. A. Willey, McGill University; July 16 to August 14.  
 Miss N. E. Wright, University of Western Ontario; June 15 to August 24.

## GENERAL AND FIELD INVESTIGATIONS

The general investigations, as well as the special investigations mentioned in the previous report, were carried on during the summer, and the following additional field work was accomplished.

A survey was made of Maces bay, N.B., by Dr. Huntsman, in connection with a claim made by Fishery Overseer Conley that many small lobsters are to be found near Lepreau, which point is too far distant from the known spawning areas for their presence to be explained by immigration. It was found that in certain sheltered areas, as in Pocologan bay, the water was of sufficiently high temperature and of the right salinity to bring the lobster fry through, proving that these inlets are very important for lobster breeding.

The scallop beds at Letang harbour were investigated by Dr. Huntsman and Professor Gowanloch, of Dalhousie University. The scallops were found to be shedding their spawn and their fry were swimming about in the water on the 13th of August. This establishes an earlier spawning for the scallop of our waters than had previously been known.

An investigation was also made of the spawning period of the scallops on the Digby grounds, for which purpose scallops were obtained and shipped alive to the Biological Station. They were examined by Professor Gowanloch.

At the request of the Department of Marine and Fisheries, an investigation was carried on in Northumberland strait by Mr. H. E. Tanner and Mr. A. E. Murray to determine whether fishing for lobsters should be allowed to begin earlier than at present in the late lobster fishing district. An examination was made of the lobsters there during the first two weeks in August to determine their condition.

The Biological Board was asked to send a representative to accompany the Hudson Strait Expedition, with a view to investigating fisheries and hydrographic conditions in the strait. Mr. Frts Johansen, of Ottawa, was appointed for this work and left with the expedition from Halifax on the *Larch* July 16. During the trip to the strait drift bottles were put out and hydrographic records taken. A good collection of data and material has been made, full reports of which will appear later.

In connection with the investigations of Maritime lakes for the purpose of increasing their productivity, a survey was made of the Chamcook lakes area during the month of July by Mr. K. Chipman, of the Geological Survey, and his assistants.

The *Edward E. Prince* continued fish tagging operations, collection of algae and eel grass, and other general work, spending the greater part of the time at Cape Breton.

## VISITORS

The number of visitors to the station increases year by year, and is indicative of the interest that is being taken by scientists and by the general public in the work of the station.

Mr. H. J. Thorkelsen, of the International Education Board of the Rockefeller Foundation of New York city, visited the station on July 5 in connection with oceanographic and aquicultural plans of the board. Funds provided by that board have enabled investigators from Great Britain to take up work at this station.

Sir Halford Mackinder, Chairman of the Imperial Economic Committee, accompanied by Mr. J. J. Cowie, Secretary-Treasurer of the Biological Board, visited the station on September 18.

Among other visitors were the following: Dr. H. B. Bigelow, of the Museum of Comparative Zoology, Harvard University, Chairman of the North American Committee on Fishery Investigations; Prof. E. K. Marshall, of Johns Hopkins



University; Prof. W. A. Smith, of the University of West Virginia; Prof. P. M. Bayne, of Acadia University; Prof. E. L. Mark, of Cambridge, Mass.; and Prof. W. A. Parks, of the University of Toronto.

#### EXPERIMENTAL STATION AT HALIFAX, N.S.

Dr. H. R. Chipman, Chemist, commenced investigations on the heat capacity of cod muscle, after the construction of the calorimeter and preliminary tests had been concluded. The determinations which he completed indicated the latent heat of the fish muscle and also the specific heat of both frozen and unfrozen cod muscle. Further experiments were continued on the rusting of fish in cold storage.

Mr. Ernest Hess, Bacteriologist, was absent on holidays and leave of absence from July 1 to September 19. On his return he began an investigation of the changes which take place in the ammonia and total nitrogen in haddock muscle when stored at low temperatures.

Mr. Robert Ross, Assistant for Technical Processes, completed the designing and construction of two fillet skinning machines, one for power and one for foot operation. He carried on work on the preparation of frozen fillets in an attractive form. He resigned from this position on September 17 in order to attend Dalhousie University, but continued with work on the canning of cod chowder during such time as he was free from classes.

Mr. H. E. Tanner, Educator, resigned from his position on August 31. During July he continued the development of the educational work and the museum and worked up the results of measurements of lobsters in the gulf of St. Lawrence during the spring months. During the period of August 5-18 he investigated, with the aid of Mr. A. E. Murray, the condition of the lobsters in Northumberland strait to establish a rational close season for that region.

Mr. D. leB. Cooper continued the investigation of the chemistry of wood smoke, paying particular attention to the formaldehyde and acetic acid produced under various conditions of smoke production. He developed an electric furnace and an air mixer suitable for these investigations. His employment terminated on September 30.

Mr. Seth Crowell continued his demonstration of improved methods of splitting fish for the dried fish trade. After July 12 he was assisted by Wm. Madden. The portion of the coast covered included,—

- (a) Port Dufferin to Canso;
- (b) Shelburne to Digby and the Nova Scotia shore of the Bay of Fundy;
- (c) Cape Breton Island;
- (d) Prince Edward Island;
- (e) Halifax to Port Dufferin.

Mr. D. A. MacFadyen (University of Toronto) was employed for period from July 6 to September 30. He studied the changes in expressability of the juices of fish muscle before and after freezing at various temperatures and under various conditions of storage.

Mr. C. B. Weld continued his investigations on the changes in the microscopic structure of fish muscle during freezing and storage. His employment terminated on September 30.

During the last quarter investigations had largely to be discontinued owing to preparations for and the giving of various courses of instruction.

Mr. Ernest Hess, Bacteriologist, prepared and gave lectures for the Course for Fishermen and the Course for Cannery Foremen. He prepared provisional plans for a demonstration canning plant. During the Course for Cannery Foremen he conducted an investigation on the exhausting of cans of lobster meat.

Dr. H. R. Chipman, Chemist, was also engaged in giving lectures to the various courses being offered at the station. The investigation of the heat content of fish muscle was continued. He supervised Mr. Mahen's work.

Mr. W. W. Stewart made analyses of various samples of dried fish, ascertaining their water contents. He was unable to devote any time to the station after February 27.

Mr. K. W. Mahen continued his investigation on glazing and began further work to determine the relation between thickness of fish, temperature of brine and rate of freezing.

A number of temporary additions to the staff were made in connection with the various courses. These with dates of employment and subject taught were:—

Prof. A. Stanley Walker—January 18-February 28—Natural Resources.

Mr. Roy Anderson—January 18-February 28—Preparation of Dried and Boneless Fish.

Captain H. M. O'Hara—January 18-February 28—Navigation.

Mr. R. F. Ross—March 16-29 (part time)—By-Products.

Mr. Edgar Baker was employed as laboratory assistant during the period of January 16 to March 31.

Regular planktonic and hydrographic work has been continued at the two stations near Halifax.

#### COURSES OF INSTRUCTION

Three courses were given at the Fisheries Experimental Station during the quarter.

(1) *Course for Fishermen*: January 18-February 28. Attended by nineteen young fishermen. The courses and instructors were:—

(a) Preparation of Dried and Boneless Fish—Mr. Roy Anderson.

(b) Preparation of Pickled Fish—Mr. Robert Gray.

(c) Motor Engines—Mr. Ed. F. Mitchell.

(d) Navigation—Capt. H. M. O'Hara.

(e) Science—Drs. A. G. Huntsman, A. H. Leim, H. R. Chipman, Mr. E. Hess, and Professor J. N. Gowanloch.

(f) Natural Resources—Professors A. S. Walker and W. V. Longley.

#### REPORT ON COURSE FOR FISHERMEN, 1928

A considerable demand had come to the station during the late months in 1927 for a course in the curing of fish by drying and pickling. In response to this an effort was made to offer a suitable course. An Advisory Sub-Committee on Education was formed and the conclusion reached that the duration of such a course must be at least six weeks in order to be of benefit.

This period entailed a considerable financial loss for prospective students. A solution was reached when the Minister of Marine and Fisheries and the Biological Board of Canada decided to offer twenty-five scholarships to bona fide fishermen of the Maritime Provinces, who were between the ages of seventeen and thirty-five and who had reached grade six in the public schools.

Following this decision the following advertisement appeared in nine Maritime newspapers and one Montreal newspaper:—

#### GRANTS FOR FISHERMEN

The Biological Board of Canada offers to assist twenty-five fishermen from the Maritime Provinces to attend the Short Course for Fishermen to be given at the Fisheries Experimental Station, Halifax, N.S., during a term of six weeks commencing on January 18. Each will be given on completion of this course the sum of forty-five dollars plus the amount of railway fare for a return

trip between Halifax and the railway station nearest his home. Only bona fide fishermen from 17 to 35 years of age, who have passed through grade six in the Nova Scotia schools or an equivalent grade will be able to obtain these grants. Preference will be given to the first applicants. All applications should be addressed to Dr. A. G. Huntsman, Director, Fisheries Experimental Station, Halifax, N.S.

Through the co-operation of the Post Office Department a similar notice was displayed in two hundred and twelve post offices along the coasts of the Maritime Provinces.

In addition to this assistance which was participated in by each man who completed the course, the Rural Conference of the Roman Catholic Church gave twenty-five dollars to each man attending from the Diocese of Antigonish, regardless of denomination.

#### STUDENTS ATTENDING COURSE

Thirty-seven applications for scholarships were received. Some of these had to be refused because of lack of qualifications and a number of other applications were withdrawn.

Twenty men came to Halifax to attend the course. They were met at the railway station if they desired it and were given the addresses of suitable boarding and lodging houses. Those attending the course and their home addresses were:—

Alexander Baccardax, Poirierville, N.S.	John M. Homans, Clam Harbour, N.S.
Ellis Beiswanger, Fisherman's Harbour, N.S.	Harold Keefe, Dover, N.S.
John C. Burke, Main-à-Dieu, N.S.	Joseph Manuel, Canso, N.S.
Joachim Daigle, Richibucto, N.B.	Joseph Eugène Martel, Boudreauville, N.S.
Ralph F. Darrach, Herring Cove, N.S.	Melvin Rafuse, Fourchu, N.S.
Robert Newton Day, Musquodoboit Har- bour, N.S.	Frank Sampson, Sampsonville, N.S.
Ellsworth M. Doty, Ashmore, N.S.	Alphonse T. Samson, Petit de Grat, N.S.
Harold Flaherty, Canso, N.S.	Everett R. Smith, Port Hood Island, N.S.
Otto R. Garrison, Indian Harbour, N.S.	Walter Joshua Tobey, Port Hood Island, N.S.
Edgar Hache, Shippegan, N.B.	Forrest Watson, Hall's Harbour, N.S.

#### DURATION OF COURSE

The course began at the Fisheries Experimental Station, King's Wharf, on Wednesday, January 18, 1928, and terminated on February 28, 1928.

#### ATTENDANCE

Attendance was kept at all the regular classes and was in nearly every case 100 per cent. One man, Ellis Beiswanger, had to return home shortly after the commencement of the course. He did not qualify for a scholarship on this account.

#### HOURS AND PLACE OF INSTRUCTION

Classes began at 9 a.m. each morning. Four fifty-minute classes constituted the morning session. There were ten-minute intermissions between periods. Three similar classes were held in the afternoon commencing at 2.15 p.m. and terminating at 5.20. There were no classes after 12.50 p.m. on Saturday, except on two occasions.

All the instruction was given in the station buildings except that in "Motor Engines" which for lack of space had to be given in a show room rented from Stairs, Son and Morrow, Limited.



## INSTRUCTORS AND COURSES OF INSTRUCTION

At a meeting of the Advisory Sub-Committee on Education, attended by Rev. Father J. J. Tomkins of Canso and Prof. J. W. Trueman of the Agricultural College, Truro, besides the members of the committee, a thorough discussion of the courses desired took place.

Based on this discussion the following courses were given:—

1. *Preparation of Dried and Boneless Fish.*

Instructor: Mr. Roy Anderson, Short Beach, N.S.

2. *Preparation of Pickled Fish.*

Instructor: Mr. Robert Gray, Senior Inspector of Pickled Fish, Halifax.

3. *Motor Engines.*

Instructor: Mr. Edward F. Mitchell, Fisheries Experimental Station.

4. *Navigation.*

Instructor: Capt. H. M. O'Hara, Nova Scotia Technical College, Halifax.

5. *Science.*

Instructors: Drs. A. G. Huntsman, A. H. Leim, and H. R. Chipman, Mr. E. Hess, all of the Fisheries Experimental Station; Prof. J. N. Gowanloch, Dalhousie University, Halifax.

6. *Natural Resources.*

Instructors: Prof. A. Stanley Walker, King's College, Halifax, and Prof. W. V. Longley, Agricultural College, Truro.

Of these instructors the station was indebted to Dalhousie University for the services of Professor Gowanloch, to the Department of Natural Resources of Nova Scotia for those of Professor Longley, and to the Department of Marine and Fisheries for those of Mr. Gray. The other instructors were either on the staff of the station or were secured temporarily.

Through the courtesy of Robin, Jones and Whitman, Limited, Mr. J. H. Zwicker of Lunenburg took two of the classes in Dried and Boneless Fish.

A syllabus of the courses, together with the total number of hours devoted to each, follows.

In the case of the courses in the Preparation of Dried and Boneless and Pickled fish the class was divided into two sections so that each instructor had double the number of hours shown.

*Preparation of Dried and Boneless Fish*

(Messrs. Anderson and Zwicker. 36 hours)

Practical instruction in heading, splitting, washing, salting and drying fish. Also in the preparation of boneless fish, drying and boxing of same. Four hours were devoted to slack salting of fish as demonstrated by Mr. Zwicker. Each man prepared one thirty pound box of boneless fish and a quantity of dried fish. Included a visit to a local plant handling dried fish.

*Preparation of Pickled Fish*

(Mr. Gray. 32 hours)

Practical instruction in ripping, scraping, washing, packing and salting herring; grading herring; gutting, selecting, dredging and packing herring by the Scotch process; repacking for market; testing barrels. Each man was required to prepare and pack a quantity of herring in each of the various ways taught. A visit was made to a local fish handling plant where defects in containers and pack were pointed out.

*Motor Engines*

(Mr. Mitchell. 32 hours)

Practical work in dissembling, assembling and repairing gasoline engines. Elementary mechanics. Properties of gasoline. Cooling. **Uncrating engines.** Two and four cycle engines. Carburetors. Elementary electricity. Batteries. Coils. Ignition systems. Timing. Reverse gears. Valves and grinding. Oiling systems. Crude oil engines.

*Navigation*

(Capt. O'Hara. 34 hours)

Lectures with demonstrations and practical chart work. Shaping courses and measuring distances. Charts. Effect of engine on compass. Magnetic compass. Magnetic poles. Latitude and longitude. Mercator's chart. Finding magnetic courses. Nautical astronomy. True chart. Meridian altitudes. Turning true courses into magnetic ones. The sextant. Fixing ship's position. Longitude and time.

*Science*

(45 hours)

Lectures and demonstrations wherever possible. Some experiments and microscopic examinations were carried out by the men themselves.

*(a) Physics and Chemistry.* (Dr. Chipman. 15 hours).

Water, rain water, sea water, steam and ice, Expansion and contraction of water on cooling. Liquids. Solutions. Suspensions. Filtering. Saturation and supersaturation. Hydrometers. Density and specific gravity. Heat. Temperature. Conduction, Convection, Radiation. Thermometers. Boiling. Distillation. Evaporation. Condensation. Gases. Combustion. Atmosphere. Respiration. Barometers. Oxygen. Hydrogen. Carbon monoxide and dioxide. Ammonia. Liquefaction of gases. Refrigeration. Osmosis and salting of fish.

*(b) Biology and Conditions in the Sea.* 19 hours. Dr. Huntsman, 8 hours;

Professor Gowanloch, 5 hours; Dr. Leim, 6 hours.

Most important fishes. Methods of fishing. Location of fish. Migrations. Life histories of cod, haddock, herring, mackerel and lobsters. Food, rates of growth, reproduction, habits, distribution. Seasons in the water. Effect of ice. Effect of tides. Drift bottles. Circulation of water. Effect of physical conditions on distribution of animals.

*(c) Bacteriology.* (Mr. Hess. 5 hours).

Spoilage of food. Size, forms, growth, reproduction, activities, requirements of bacteria. Aerobic and anaerobic bacteria. Spore formation. Spore resistance. Bacteria in sea water. Bacteria in fresh fish. Preservation of fish by chilling, freezing, pickling, drying, smoking, salting, canning.

*(d) Principles of Curing, Drying and Freezing Fish.* (Dr. Huntsman. 5 hours).

Principles involved in bleeding, throating, splitting, washing, whitenaping and salting fish. Spoilage. Effect of low temperatures. Slow and rapid freezing. Brine freezing.

*(e) Fish Oils.* (Dr. Chipman. 1 hour).

Cod liver oil. Methods of preparation.

*Natural Resources*

(Professors Walker and Longley. 36 hours.)

(a) *Professor Walker.* (27 hours.)

Outline of industrial history. Functions of guilds and town. Mediaeval towns and fairs. Peasants' revolt. Overseas trade. Geographical, commercial and economic side of renaissance. Industrial revolution. Rise of trade organizations. Trades unions and co-operation. Economics. Demand and value. Production. Division of labour. Localization of industry. Efficiency of labour. Organization of industry. Distribution. Profits and wages. International trade. Bills of exchange. Drafts.

(b) *Professor Longley.* (9 hours.)

Co-operation. Co-operative marketing, its history, weaknesses, agencies, and types. Market information.

Mr. Anderson assisted in this course by recounting his experiences in the management of a co-operative lobster factory.

## MISCELLANEOUS CLASSES

(5 hours)

(a) *English.* (Dr. Chipman. 2 hours.)

Practice in writing business letters and simple essays.

(b) *Addresses.* (2 hours.)

Mr. A. M. Smith, of A. M. Smith and Co., gave an address on the problems confronting the exporter of dried fish.

Mr. H. V. D. Laing, of the National Fish Company, addressed the students on the problems encountered by the wholesaler of fresh fish.

## DISCUSSIONS

(Dr. Huntsman. 1 hour.)

Answers to questions submitted by students. Many other questions were answered during the course of other lectures.

## INSTRUCTION IN CANNING AND SMOKING

A number of the men requested that they be given certain additional instruction in other methods of preserving fish. Two such groups were organized which took classes after hours or on Saturday afternoons. One group, taken by Dr. Huntsman, went into the principles involved in smoking and the other group, studied the principles of canning with Mr. Hess.

## EXAMINATIONS

On the closing day of the course written examinations of one hour's duration were held in each of the six major subjects of the course. These were taken by all of the men with the following results:—

*Passed with Honours:* F. Watson, E. Smith, F. Sampson, M. Rafuse, J. Daigle, J. Manuel.

*Passed:* H. Flaherty, O. R. Garrison, J. M. Homans, H. Keefe, E. Doty, E. Martell, A. Baccardax, J. C. Burke, W. Tobey, E. Hache, A. Samson.

*Failed:* R. Darrach, R. Day.



## EVENING LECTURES AND ENTERTAINMENTS

The offer made by Professor Gowanloch to organize a series of evening lectures for the men attending the course was gladly accepted. He arranged with eight other members of the staff of Dalhousie University and the following evening lectures were given:—

- "Paris." Illustrated. Prof. Mercer.
- "All flesh is Grass." Illustrated. Prof. H. P. Bell.
- "How we talk." Prof. E. W. Nichols.
- "Life in the Sea." Illustrated. Prof. J. N. Gowanloch.
- "New Zealand." Illustrated. Prof. C. Bennett.
- "Value of our Foods." Prof. G. Young.
- "Unification of Italy." Prof. G. Wilson.
- "The Nature of Electricity." Illustrated with experiments. Prof. J. Johnstone.
- "Colours and Illusions." Illustrated by experiments. Prof. J. Symons.

A series of motion picture films which were loaned by the Motion Picture Bureau, Ottawa, which dealt with sport and commercial fishing on the Atlantic and Pacific coasts were shown to the men. Acknowledgment is due to the Halifax Y.M.C.A. for the use of a lecture room and projection apparatus for these pictures.

On invitation of the Biological Club, Dalhousie University, the men were able to hear an illustrated lecture by Mr. George Whitely of Saint Johns, Nfld. on fishing activities on the Labrador coast.

Attendance at these evening lectures was not compulsory but there was usually a good attendance and considerable interest was shown in the series. The co-operation of the lecturers is gratefully acknowledged.

On Saturday evening, February 25, a dinner was given to the class in the St. Julien room, Halifax Hotel, by the fish merchants along the water front of Halifax. Among others, Mr. Alex. Johnston, Deputy Minister of Marine and Fisheries, and Hon. J. A. Walker, Minister of Natural Resources, gave short addresses.

## ACKNOWLEDGMENTS

In a course of this nature so many persons assist in an advisory capacity that it is impossible to make mention of all who deserve credit.

Notice should be made of the following firms for the loan of equipment:—

- National Fish Co.
- A. M. Smith and Co.
- Robin, Jones & Whitman, Ltd.
- A. N. Whitman, Ltd.

(2) *Course for Hatchery Officers:* February 8-21.

Attended by Inspector of Hatcheries S. Walker and by Messrs. Burgess, Gates, Heatley, McCluskey, MacKenzie, Mowat, Ross and Tait, of the Maritime hatcheries. The courses of instruction and the instructors were:—

- Physics and Chemistry—Dr. H. R. Chipman, 12 hours.
- Anatomy and Physiology—Dr. A. H. Leim, 12 hours.
- Fish Diseases—Dr. A. G. Huntsman, 12 hours.
- Hatchery Practice—Dr. A. G. Huntsman, 12 hours.
- Fish Foods—Dr. A. H. Leim, 12 hours.
- Discussions—Drs. Huntsman & Leim, 18 hours.

(3) *Course for Lobster Cannery Foremen: March 16-29.*

Attended by fifteen foremen. The courses and instructors were:—

- Physics and Chemistry—Dr. H. R. Chipman, 12 hours.
- Biology—Drs. Huntsman and Leim, 6 hours.
- Bacteriology—Mr. E. Hess, 9 hours.
- Principles of Lobster Canning—Dr. A. G. Huntsman, 6 hours.
- Methods of Lobster Canning.—Mr. E. Hess, 5 hours.
- Equipment.—Mr. E. Hess, 6 hours.
- Spoilage and Inspection.—Mr. E. Hess, 3 hours.
- By-Products.—Mr. R. F. Ross, 3 hours.
- Canning Lobster Paste.—Mr. R. F. Ross, 3 hours.
- Canning Practice.—Mr. E. Hess, 19 hours.
- Discussions.—Messrs. Huntsman, Hess and Leim, 7 hours.

CO-OPERATION WITH DALHOUSIE UNIVERSITY

In the course last year Dalhousie University, Halifax, decided to establish a scientific course in fishery matters leading up to the degree of Bachelor of Science. An arrangement was afterwards entered into between the board and the university authorities by which the board's staff would co-operate in the instruction to be given. The university is to provide instruction in the courses, other than the practical ones. The practical instruction is to be given by the Biological Board's staff, who will be given, for that purpose, the status of regular members of the university staff.

The board, at the request of the department, also undertakes to supervise the erection of, and to maintain, a laboratory at the entrance to Halifax harbour for research and instruction in marine biology in connection with the university courses. The resources of the laboratory are to be available to students of any Canadian university, under such arrangements as may be made by the Biological Board and the various universities concerned. The laboratory is to be known as the Eastern Passage Marine Laboratory.

FIELD WORK AND ADDRESSES

Dr. Leim visited a lobster retaining pond at Stonehurst, near Lunenburg, on January 11, at the request of the department. He made an examination of the salinity and temperature and arranged to have further samples collected to follow the conditions and if possible to estimate their effect on the impounded lobsters.

Dr. Huntsman visited Canso on March 27 where he addressed a meeting of fishermen dealing with the eggs and fry of fishes and the trawler question.

DEMONSTRATION BUILDING

No particular progress was made with this plant until March, owing to other pressing matters. The small compressor was put into automatic operation and cold storage space became available. A salt water pump and pipe line was installed. The conveyor system on the brine tank was begun in March and largely completed.

Dr. Huntsman developed a means of cutting one-half pound cakes of fillets for freezing and a simpler improved form of skinner. Several hundred pounds of "Ice Fillets" as these cakes were called, were frozen and distributed in Montreal, Ottawa, and Toronto, in one pound cartons.

## PACIFIC BIOLOGICAL STATION, NANAIMO, B.C.

## RESEARCHES

*Systematic*

*Plankton Groups*.—Mr. G. H. Wailes has continued his detailed studies of protozoa, diatoms and copepods.

*Seaweeds*.—Rev. Robert Conell has prepared a list of the seaweeds occurring in the vicinity of the Station and Miss D. Newton has added some contributions.

*Annelids*.—Mrs. C. Berkley has continued her studies in this group.

*Prawns and Shrimps*.—Miss Alfreda Berkeley has worked out the species occurring on our Pacific coast.

*Parasitic Copepods*.—Miss Ruby Bere made an extensive collection of material in 1927 and worked over this as well as a great deal of material collected by various workers in recent years.

*Sponges*.—Mr. I. E. Cornwall has commenced a study of the sponges of our coast.

*Morphological*.—Mr. L. L. Bolton continued his detailed researches on the histological structure of the digestive tracts of fishes.

*Physiological and Biochemical*.—Dr. Blythe Eagles with the assistance of a grant from the Banting Foundation determined the distribution of glutathione and ergothioneine in the tissues of fish and many marine organisms.

Dr. F. D. White continued his study of the life-history of teredo and also undertook an investigation of the blood sugar of fish.

Dr. A. R. Fee made a special study of the secretion of urine in dogfish.

*Life-Histories and Ecology*.—Miss Alfreda Berkeley commenced a study of the life-histories of prawns and the economic phases of the prawn fishery of the coast.

Miss Gertrude Smith carried out a study of the ecological distribution of decapod crustacea in the vicinity of Sidney, B.C.

Dr. L. G. Saunders studied the life-histories and ecology of marine insects.

Mr. G. V. Wilby continued his investigation of ling cod, with special reference to the spawning.

*Oceanographical*.—The oceanographical studies in the strait of Georgia with special reference to the movements of the Fraser river water were continued.

Dr. A. H. Hutchinson dealt with the quantitative distribution of the phytoplankton and Miss Mildred Campbell with the zooplankton. Mr. C. C. Lucas dealt with the physico-chemical characteristics and Dr. W. A. Clemens handled the drift bottle work. Dr. H. C. Williamson has been making a study of oceanographical and plankton conditions throughout the year along the west coast of Vancouver island in connection with the studies of the pilchard and herring fisheries. The need for an extensive oceanographical program for the west coast has become very evident and if arrangements can be made for the use of a suitable boat the investigations will be commenced this summer.

The collection of oceanographical data is being made throughout the year at the wharf at the station, at a point in the strait of Georgia, in the strait of Juan de Fuca, near William Head through the courtesy of the Department of Public Health, and from two stations near Prince Rupert by the Fisheries Experimental Station. Daily temperature records of the Fraser river water are being obtained near New Westminster through the courtesy of the Fisheries Branch.



*Miscellaneous.*—Miss Dorothy Newton conducted some experiments with the cross fertilization of species of *fucus*.

Mr. C. Berkeley continued his studies of the luminescence of marine bacteria and commenced a study of annelid-algal symbiosis.

Dr. and Mrs. W. A. Clemens studied the collection of sockeye salmon scales of 1927 for the provincial Fisheries Department.

#### FIELD INVESTIGATIONS

##### *Propagation of Sockeye Salmon*

Dr. R. E. Foerster continued his studies at Cultus lake and is reporting in detail.

##### *Salmon Tagging*

The tagging of small coho salmon was carried out in the spring of 1927 in the strait of Georgia for the purpose of determining the locality to which these fish would eventually go to spawn and also to demonstrate to the fishermen that these small fish known as "bluebacks" would develop into cohoes and that they make a very rapid growth. This tagging was done by Mr. G. V. Wilby. The tagging of spring salmon was carried out on the west coast of Vancouver island off Quatsino and Kyuquot sounds from February to August. Mr. W. F. Baxter and Mr. C. McC. Mottley were engaged in this work. The object of this tagging was to determine if these more westerly fish had the same ultimate destination as those occurring off Barclay sound.

Mr. C. McC. Mottley made a special study of the scales of the spring salmon which were tagged, obtaining information as to their early history and determining their ages.

##### *Herring and Pilchards*

Dr. H. C. Williamson continued his studies of herring in the strait of Georgia and on the west coast of Vancouver island. In conjunction with this work, Mr. J. A. Munro, Chief Federal Migratory Bird Officer for the Western Provinces, spent four weeks at the station studying the relation of sea fowl to the spawning of herring. Special attention was given to gulls and to some extent to ducks.

Dr. Williamson has also been carrying out an extensive study of the pilchards of the west coast of Vancouver island. He has been giving special consideration to the relation of the physico-chemical factors and plankton occurrence to the movements and distribution of these fish. Mr. Mottley gave assistance for a short period in the field and Mr. G. H. Wailes has assisted with the qualitative and quantitative examination of the plankton collections and with the study of the stomach contents of both pilchards and herring.

##### *Clams*

Dr. C. McLean Fraser, with the assistance of Miss Gertrude Smith, continued the study of clams in the vicinity of Sidney, B.C. The results of the investigation have led to a modification of the clam fishing regulations.

##### *Oysters*

Mr. C. Roy Elsey gave continuous study throughout the summer to the propagation of the Japanese oyster in Ladysmith harbour. There has been doubt as to the ability of this oyster to spawn successfully, at least every year. Mr. Elsey kept the oysters under several artificial conditions and kept close observation of the oysters under natural conditions. Records of the physico-chemical conditions were kept in all cases. Spawning under natural conditions was very limited while under artificial conditions quite successful. It would appear that temperature was the most important factor. A shipment of spat was obtained from Japan for experimental work on later development.

*Trout Propagation*

While no field work was carried out this year, various fish and game associations and fishery officers sent in specimens which have been examined by Prof. J. R. Dymond. As stated in last year's report, it seemed necessary as a preliminary to any trout cultural studies to determine the identity of the trout occurring in British Columbia. Prof. Dymond undertook the systematic study and asked that a young man be assigned to assist him during the winter of 1927 and in the field in 1928. In this way the assistant would become familiar with the systematic phases of the work and obtain the training necessary for the carrying out of the life history and propagation phases of the work. Mr. C. McC. Mottley was assigned to the investigation and spent six and one-half months at the University of Toronto.

Special study material have been supplied to:—

Professor Simon Gage, Cornell University, Lamprey larvæ and adults;  
Dr. A. G. Revell, University of Alberta, fixed tissues of ling cod for histological study.

Visitors to the station during the year included Mr. J. J. Cowie, Mr. W. A. Found, and Mr. John Dybhavn.

Laboratory accommodations for short periods were given to:—

Dr. Bisby, College of Agriculture, Winnipeg, for the collection of fungi;  
Dr. Parker D. Trask, Scripps Institution, for collection of bottom sediments;  
Dr. J. H. Erwin, Saskatoon, collection of museum and study materials;  
Dr. Paul Hiebert, University of Manitoba, survey of chemical problems.

*Conference of Pacific Coast Investigators.*

During the last week in August a conference of the board's investigators on the Pacific coast was held at the Nanaimo station. Those in attendance were: Dr. Hutchinson, Dr. White, Mr. Wailes, Mr. Finn, Mr. Brocklesby, Mr. Smith, Dr. Foerster, Dr. Williamson, Dr. Clemens. Reports of the investigations being carried out by the workers were given and were followed by discussions.

*Associate Committee on Oceanography, National Research Council.*

Following the meetings of the Pan-Pacific Science Congress in Japan, the National Research Council agreed to the formation of an Associate Committee on Oceanography which should establish connections with similar committees in other countries bordering the Pacific and attempt to bring about co-ordination and co-operation in the study of marine problems of the Pacific. A meeting was called by President Tory on January 7 in Edmonton and Dr. C. McLean Fraser was selected as the Chairman of the General Committee. Three sub-committees were decided upon namely:—

Physical and Chemical Oceanography—Dr. A. H. Hutchinson, Chairman.  
Marine Biology—Dr. W. A. Clemens, Chairman.  
Fish Technology—Mr. D. B. Finn, Chairman.

## PUBLICITY AND EDUCATION

An exhibit illustrating the results obtained from the tagging of spring salmon was prepared and placed in the Vancouver and New Westminster Fall Exhibitions. In both places the exhibit attracted a great deal of attention. Later the exhibit was placed in a store window in Nanaimo.

Eight newspaper articles dealing with the work of the Nanaimo Station were published by Mr. Norcross, Editor of the Vancouver *Star*. An article was also published by the Victoria *Colonist*.

During the year 846 persons visited the station museum. The average annual attendance for the past four years has been approximately 800 individuals.



Two small aquaria are being installed and these should serve to maintain interest in the marine forms. Mr. and Mrs. R. G. Good are preparing a number of fish casts for display.

Public lectures have been given in Nanaimo, Duncan and Vancouver.

#### PROPERTY DEVELOPMENT

During the year a coal and wood shed and garage was constructed to replace a very old structure which was about to collapse. A new salt water pump has been installed to provide a more adequate salt water supply to the laboratories and to provide fire protection. It is planned to later use salt water in the sanitary services in order to conserve the supply of fresh water. A new float was constructed at the end of the wharf and also a float to carry live-boxes for the purpose of keeping fish and other forms under experimental conditions. Four galvanized screen cages have been installed and other wooden cages will be made. Dr. Foerster has placed yearlings of three races of sockeye salmon in the cages in order to study the development of these races under identical environmental conditions.

### THE FISHERIES EXPERIMENTAL STATION AT PRINCE RUPERT, B.C., 1927-28

#### BUILDING

The building program for the last year has been confined to the completing of the interior of the building as described in the previous report. The library has been equipped with a full set of adjustable shelves. The laboratory has been further equipped with shelving, benches and cupboards. A store-room was built in the attic in which there has also been constructed a thermostatically controlled and properly ventilated animal room for metabolism work in connection with the vitamin assay work.

A gas machine has been installed in a small separate building which is also used to store combustible and explosive chemicals.

The installation of air compressing apparatus and hot-water boiler has been completed, and the electrical wiring extended so that the laboratories are now supplied with compressed air, gas, electricity, and hot and cold water.

#### LIBRARY

The library has been added to, mainly in the acquisition of the back numbers of technical journals and the most recent chemical publications concerning the work in hand.

#### LABORATORIES

Most of the standard equipment for the laboratory has been secured but apparatus still must be procured. Capital expenditure in this direction will be reduced during the coming year.

#### *Refrigeration.*

#### INVESTIGATION

In accordance with the plan as outlined in the previous report, Mr. I. M. Fraser of the Department of Mechanical Engineering of the University of Saskatchewan was appointed to complete the design of a model freezing plant. During the summer months Mr. Fraser completed plans and secured tenders on construction, but contracts were not let owing to there being no space available for its erection. No satisfactory arrangement could be made for the erection of the plant on the property of the Canadian Fish and Cold Storage Company. Thus the progress which was hoped for was not made. If this work is considered by the board to be worth while, immediate steps should be taken to secure the necessary accommodation for this demonstration plant.



Work is at present being undertaken upon the comparative effects of rapid and slow freezing on the chemical composition and food value of fish. A study of the changes which occur in the fats and oils of fish during storage. An examination of the nature of and condition responsible for the production of rusting.

During the coming year it is hoped that by the erection of properly controlled low temperature rooms, this work may be extended to an investigation of changes in both physical and chemical characteristics during prolonged storage, especially with regard to changes which occur in quickly frozen fish during storage.

It is also hoped that during the coming year proper provision will be made for the erection of a demonstration refrigeration plant.

### *Vitamin Research.*

#### OILS

The station has now a properly equipped animal room and is provided with the apparatus for the carrying on of its work in testing the vitamin potency of fish oils.

One paper, the Determination of Vitamin A Content in Liver Oil of the Dogfish, *Squalus Sucklii*, by H. N. Brocklesby, has been published in the "Canadian Chemistry and Metallurgy" September, 1927. Mr. Brocklesby is now engaged in a vitamin D assay of the same oil, which work is rapidly nearing completion.

Eventually it is hoped to extend this work to many other fish oils and to determine seasonal variation as well as the effect of various methods of processing upon the vitamin potency.

Work on the oil changes in fish during long storage has already been outlined under refrigeration.

### *Composition and Properties of Fish Oils*

An investigation into the chemical composition and behaviour of salmon oil has been started. The possibility of its use in paints and varnishes is being explored. Its behaviour to heat and oxidation and various other treatment has been studied, but it will be some time before this work is completed.

Samples of other oils, such as pilchard, oulachan, halibut, skate, and rat-fish oils have been procured, and it is hoped that these will be examined in a similar manner in the near future.

### *Fish Glues*

Fish glue is manufactured commercially only by secret process. Because of this a great deal of preliminary experimental work has been necessary to ascertain standard methods of preparation and testing of glues.

Five or six of the most recent and widely used methods of preparation found in the literature were adopted, and about twenty-five samples of glue were prepared by these methods from halibut and salmon waste, whole dogfish and skate.

A selection of these glues has been sent to the Forest Products Laboratories, Vancouver, where their strengths will be measured in glued wooden joints made up under working conditions. A report will be made on their comparative adhesive powers, and their commercial value and fitness for different kinds of wood-working.

At the same time investigations are being made on the viscosity, hygroscopicity, ash content and nature of ash, drying rate and gel point of these different samples. The correlation of this data with the results of the strength tests should furnish valuable information as to what properties are desirable in a liquid glue and what methods of preparation show most promise of yielding good quality glue.

## DISCOLORATION OF HALIBUT IN HOLDS OF VESSELS

Investigation of this problem was carried on throughout the summer months. Firstly observations were made as to the conditions of the holds in fishing vessels in which discolored fish were found. Secondly, attempts were made to reproduce conditions which produced discolored fish, and thirdly, an attempt was made to isolate certain factors which were responsible for the discoloration. Among these a bacteriological examination of the holds and of the surface of the halibut holds promise of much valuable information. This work is planned for the coming year.

## MUSEUM

During the past year the station undertook to place an exhibit in the Prince Rupert Fair. This exhibit attracted wide attention, and indicated that further efforts in this direction would be quite worth while.

## PRAIRIE LAKES INVESTIGATIONS

The following report deals with the scientific investigation of the lakes of the Prairie Provinces in the year 1927. This year marks the commencement of the systematic study of this region. The investigations were in the nature of a preliminary survey of a number of lakes with a view to gaining a general knowledge of the problems of fisheries and fish culture in the Prairie Provinces.

The party in the field was under the charge of Mr. A. Bajkov, who was ably assisted by Mr. Alan Mozley (as general assistant), Mrs. B. Sharman (as chemical assistant), and for a short time by Mr. F. Neave and Dr. H. Chat-away.

## SUMMARY OF WORK

1. *Alkaline Lakes of Saskatchewan*

There are a great many alkaline lakes in Saskatchewan and Alberta. These lakes form a homogeneous group, individual lakes differing only slightly from one another in the essential features of their flora and fauna. Many of these lakes are without commercial fish at the present time and it is very desirable to establish fisheries on these lakes, if possible, as there is an abundance of food. Moreover, fish from alkaline lakes are in general of superior quality.

A few of the most important of the alkaline lakes of Saskatchewan were selected for examination during the past year, namely: Little and Big Quill lakes, near Wadena, Sask., and the Manitou group near Yonker, Sask. These lakes were visited at all seasons, and a satisfactory beginning was made on their study.

It appears that whitefish (*Coregonus clupeaformis*) and ciscoes (*Leucichthys* sp.) will thrive in certain of these lakes. The dominant animals, namely: *Coræa* sp., *Hyalella knickerbockeri* and *Diaptomus sicilis*, are admirably suited as food for these fishes. It is quite possible that a commercial fishery will be established on the Quill lakes in a few years, as the whitefish and cisco appear to be doing well in these lakes.

2. *The Lake Winnipeg System*

Under this heading are included lake Winnipeg proper and its connected waters.

*Lake Winnipeg.*—Lake Winnipeg is the most important lake coming within the scope of this investigation. Any further study of the lakes of the Prairie Provinces must be based on a thorough knowledge of this lake. It is the fundamental type of this area.

During the past year a beginning has been made with this work. Examinations were made at all seasons at various parts of the lake. A great many plankton selections were secured (both quantitative and qualitative), which will be very valuable in the future. A fine collection of lake Winnipeg fish and fish stomachs was obtained. A certain amount of information was also secured regarding the associated animals, especially the mollusks, physical and chemical conditions were observed.

*Lakes Winnipegosis and Manitoba.*—Lakes Winnipegosis and Manitoba rank second in importance to lake Winnipeg. The detailed investigation of these lakes should therefore be postponed until a better knowledge of conditions in lake Winnipeg has been obtained. It will therefore be the best policy to make only short visits to these lakes for routine observations during the coming year.

In 1927 and 1928 several visits were made to these lakes at different seasons. The usual collections of plankton, fish, fish stomachs and associated animals, together with certain significant hydrological data were obtained.

*Marking Fry.*—As fry are being planted in lake Winnipegosis at the present time, A Mozley has proceeded thither for the purpose of marking a large number, prior to their introduction into the lake.

*Lake Dauphin.*—A short visit was made to lake Dauphin during the past summer and a certain amount of useful information obtained. It seems that this lake will be useful for comparison with some of the alkaline lakes. It is therefore proposed to pay another visit to this lake during the coming summer if the time is available.

*Eastern Tributaries of Lake Winnipeg.*—Examinations were made of the following eastern tributaries of lake Winnipeg: Winnipeg river, Whiteshell river, Berens river, Big Black river. These eastern tributaries are of a distinct type as they drain the forested regions of eastern Manitoba. The study of the sturgeon was commenced in this region.

*Other Lakes.*—Lake St. Martin, Clearwater, Clear and Long lakes in Manitoba, and Fishing lake in Saskatchewan, were examined. A detailed report on Clearwater lake is appended.

The headquarters for these investigations were at the University of Manitoba, Zoology Department. Since Prof. O'Donoghue's departure, temporary quarters have been obtained in his vacated office.

A beginning has been made in the establishment of a reference collection of the plants and animals collected in the course of the investigations. This will be very valuable in the future. A number of important and essential reference books have been purchased which will form a basis for a library.

A small sailing yawl with auxiliary motor has been purchased for use on lake Winnipeg during the coming season. A few essential instruments have also been purchased.

It has been deemed advisable to make a few alterations in this boat, the most important one being the construction of a weatherproof cabin in order that work may proceed with less interruption from external conditions. Minor expenses in connection with the vessel include painting and the purchase of a few essential instruments, etc.

#### FISH—CULTURAL INVESTIGATIONS

The investigation into the propagation, natural and artificial, of sockeye salmon at Cultus lake, British Columbia, has now been in progress for three years. The work is essentially a field study but owing to the extent of the investigation it has had to be, of necessity, firmly established.



The station, known as the Pacific Salmon Research Station, consists primarily of the following structures:—

(1) A five-room bungalow, of which one room has been thus far set aside as a laboratory. A small store-room is located in the basement. The house is situated on the lake-front, occupying two of the 25 by 60-foot lots rented annually from the Cultus Lake Park Board.

(2) A 5 by 5 mesh galvanized iron screen fence, approximately two hundred feet long and eight feet high, constructed for the purpose of trapping and counting the small sockeye during their seaward migration. The fence was constructed in 1925.

(3) A hatchery and bungalow below the lake, erected in 1925 with funds returned to the department by the board for this purpose.

(4) A subsidiary hatchery and residence at Smith Falls on the east side of Cultus lake, erected in 1926 by the department.

(5) A picket weir with traps constructed some years ago for capturing and counting adult sockeye, migrating to the lake. This structure may later have to be removed and arrangements may be made for trapping the adult fish at the screen fence.

The hatcheries are operated by the Fisheries Branch in accordance with instructions issued by the Research Committee on Fish-culture as the program of the investigation directs.

The program of the investigation has been previously outlined. By the nature of the work each year's studies are conveniently divided into two sections—the enumeration and study of returning parent fish in the fall, and the enumeration and study of the down-stream migrating young in the spring. These studies are supplemented by experimental work and the elucidation of other life-history problems.

The investigation has not yet covered an entire cycle period of four years and the data obtained cannot therefore be completely correlated. As far as it has progressed, however, the results are:—

#### *Natural Propagation*

*Fall of 1925.*—Adults passing to lake—1,540 males, 3,883 females. Calculating 4,500 eggs per female, the total deposition was 17,473,500.

*Spring 1926.*—Down-stream migrants resulting from 1925 spawning—Fry only—12,568, or 0.07 per cent.

*Spring of 1927.*—Down-stream migrants resulting from 1925 spawning.—Yearlings only, 183,272, or 1.05 per cent.

*Spring of 1928.*—Down-stream migrants resulting from 1925 spawning.—Two-year-old migrants, now being counted.

The product of the 1925 spawning will return in 1929 as adult fish.

*Fall of 1927.*—Adults passing to the lake—25,658 males, 55,569 females. Total number of eggs carried to spawning beds, 250,060,500.

In 1927 the program called for artificial propagation with planting of eyed eggs, but due to the fact that a big run was indicated it was decided to alter the program in 1927 and 28, reversing the methods to be used. By this means the extent of the big year run could be determined and the effect of a very heavy spawning ascertained.

*Spring of 1928.*—Down-stream migrants resulting from 1927 spawning—Fry only—Count now proceeding, 91,000 taken to date.

*Artificial Propagation With Distribution of Fry*

*Fall of 1926.*—Adults counted—3,122 males, 1,949 females. Total eggs contained in the run, 8,770,500.

Total loss in females found dead due to retention.....	1,174,500 or 13.4%
Total loss due to incomplete spawning.....	1,108,360 or 12.6%
Total loss occurring during development.....	570,500 or 6.5%
Total loss previous to distribution.....	32.5%

*Spring of 1927.*—No Sockeye fry migrated.

*Spring of 1928.*—Down-stream migrants from spawning of 1926. Yearlings only—Count now proceeding, 170,621 taken to date.

*Artificial Propagation With Planting of Eyed Eggs*

This method of propagation will be carried out this fall. The capacity of the hatchery being 6,000,000 eggs, the collection will be limited to that number. Provision is being made for the economical disposition of the excess fish, if any.

Reports on the studies of the 1925 and 1926 sockeye runs of parent fish and of the hatchery operations of 1926-27 are in the hands of the Editor. The first report on the study of the down-stream migration, that of 1927, is being submitted for publication.

In connection with the spring migrations a proportion of each migration are being marked in order to determine the numbers caught commercially, the number that return to Cultus lake and to trace their movements to other areas. During the test counting of 1926, which does not enter otherwise into the investigation proper, 101,200 migrants were marked by removal of both pelvic fins. They are expected to return this fall and arrangements will be made with canneries and with American authorities whereby the numbers caught commercially may be ascertained. During the counting of 1927, 91,600 migrants were marked by removal of both pelvic fins and the adipose. During the present counting, approximately 100,000 will be marked by removal of both pelvic fins and the posterior half of the dorsal.

## ECOLOGICAL STUDIES

Ecological conditions related to the investigation are being carried out, such as, character and abundance of food in the lake, physical and chemical conditions prevailing in the lake, enemies and parasites.

## EXPERIMENTAL WORK

Problems related to the fertilization and hatching, feeding, etc., of sockeye are being carried out at the hatchery as opportunity and time allow. Sockeye now retained for two years, are being reared to maturity in order to check their growth against scale readings.

## APPENDIX NO. 3

## NATURAL HISTORY REPORT

BY ANDREW HALKETT, *Naturalist*

The main subjects summarized in the report, and which are drawn upon from material contained in previous detailed reports, are these:—

Scallop investigations made in Mahone bay, N.S.

Exploratory work carried on in search of areas where scallops exist in paying quantities at coasts of the three Maritime Provinces.

Examination of oyster beds at Upper Caraquet bay, Gloucester county, and at Baie du Vin, Northumberland county, N.B.

## SCALLOP INVESTIGATIONS MADE IN MAHONE BAY

These investigations were made between the dates of 8th and 22nd June, and as was done in 1926 were engaged in from three separate starting points, viz.: Indian point, Ernst island, and Tancook.

The condition of the scallop beds in Mahone bay has been annually examined since the year 1919. At that time it had been alleged that the scallop was becoming depleted in that bay, which led to departmental measures being taken to conserve it. It was not then known that the spawning time of the scallop in Mahone bay is in September in which month it was then legal to fish for it.

That having been ascertained, a new regulation was enacted prohibiting the taking of scallops in September, and as since 1919 the examining of the condition of the beds has been intrusted to me, among other matters of importance pertaining to my observations, I kept a constant lookout for the reappearance of the coming up young scallops.

This watching went on for four years, before I was able to detect signs of their appearance. The signs were first noticed in 1923. This led me in 1924 to watch for further evidence, but as in that year I did not detect any marked difference from what I had seen in the previous year, I patiently refrained from reporting anything regarding the matter until I was absolutely sure of my premises.

In time I began to hear of fishermen coming across scallops in January or so no bigger than a ten cent piece attached by byssus to other objects. Of that, however, I had no knowledge at first hand.

In 1925 the visible signs of the appearance of the coming up of the young scallops was so obvious that the phenomenon was reported by me in the report of that year.

As soon as I began the observations in that year, which were made in the month of August, I discerned distinct signs of improvement.

At a place examined at the western part of the bay, starting from Indian point, and not many miles from the town of Mahone, all of two-thirds of the scallops were under 4 inches, the largest was  $3\frac{1}{2}$  inches, and the remainder ranged from  $5\frac{1}{4}$  to  $7\frac{1}{4}$  inches.

Cruises were also made in 1925 among the scallop beds off various islands and off Gull Edge, and although the proportion of smaller to larger scallops at



those places was less than that at the place just mentioned, nevertheless about one-third of the total number over all the places examined in conjunction were young coming up scallops, as the following figures reveal:—

	Four inches and under	Above four inches
Off Indian point.....	29	14 43
Among the islands, approached from Tancook.....	82	185 267
Off Gull Edge.....	4	27 31
	115	226 341

In the year 1926 the scallop beds were examined, from the three starting points already mentioned, between the dates June 24 and July 16, and a second time between August 16 and 26.

On both occasions at the western part of the bay as approached from Indian point the number of scallops of 4 inches and under was much in excess of those over 4 inches. On the first occasion there were 250 of the former and 45 of the latter, and on the second occasion 129 of the former and 58 of the latter. Taken together, the number of 4 inches and under was 379 and the number over 4 inches 103. This was unprecedented.

As approached from Tancook, July 8-12, there were 20 of 4 inches or under and 69 over 4 inches, and as approached from that place, August 25, there were 26 of 4 inches or under and 54 over 4 inches. Taken together, the number of 4 inches or under was 46 and the number over 4 inches 123.

As approached from Ernst island, July 15, there were 2 of 4 inches or under and 15 over 4 inches, and as approached from that place, August 20 and 21, there were 7 of 4 inches or under and 65 over 4 inches. Taken together, the number of 4 inches or under was 9 and the number over 4 inches 80.

Taken jointly, the following figures, according to the three starting points, show the proportions of smaller and larger scallops obtained in Mahone bay *in toto* for 1926:—

	Four inches and under	Over four inches
Indian point.....	379	103 482
Tancook.....	46	123 169
Ernest island.....	9	80 89
	434	306 740

The investigations for 1927 were made earlier in the season than were those of 1926. They were commenced on June 8 and finished on June 22, whereas in 1926 they were commenced on June 24 and finished on August 25. This is mentioned because the proportion of scallops of 4 inches and under at the western part of the bay in 1927 was much below what it was in 1926. But this might be explainable by the stage of growth of the scallops, surmising that at the earlier period a 4-inch mesh, which is the legal size, did not procure many of the smaller scallops of the time. Therefore, if such were the case, in order to the obtaining of them a 2-inch mesh might have been required.

By June 18, however, and at a point approached from Tancook, and which was considerably eastward from where the small ones had been found in such numbers in 1926, out of 77 scallops obtained 29 were 4 inches or under and 48 were over 4 inches, which compares favourably with what had been found in 1926 in waters further away eastward from the town of Mahone.

The following figures, according to the three starting points, show the proportions of smaller and larger scallops obtained in Mahone bay *in toto* for 1927:—

	Four inches or under	Over 4 inches	
Indian point.....	42	145	187
Tancook.....	29	48	77
Ernest island.....	2	21	23
	73	214	287

The full complement of the shells was marked and delivered at the Experimental Station for Fisheries, Halifax, so that the ages of the scallops might be ascertained by a count of the rings.

The following supply the particulars of the scallop investigations of Mahone bay for 1927:—

	DATA OF DRAGS	Scallops
1. June 8.	Between Goat and Meisner's island, some 3 miles off Mahone. Rake drawn 600 yards. Depth 7 fathoms.	10
2. June 8.	Between Meisner's and Steven's islands. Rake drawn 400 yards. Depth 6 fathoms.	9
3. June 8.	Off Steven's island. Rake drawn 300 yards. Depth 5 fathoms.	1
4. June 8.	Off Steven's island. Rake drawn 300 yards. (Opposite way from 3.) Depth 5 fathoms.	4
5. June 9.	Off Gull Edge. Rakes drawn 200 yards. Depth 5 fathoms.	0
6. June 9.	Off Gull Edge. Rakes drawn 400 yards. Depth 5 fathoms. Sea-bed rocky with a few empty scallop shells.	3
7. June 9.	Off Steven's island. Rakes drawn 600 yards. Sea-bed rocky and muddy with dead eel-grass and some empty scallop shells.	8
8. June 11.	Between Spectacle and Steven's island. Rakes drawn 500 yards. Depth 8 fathoms. Sea-bed rocks and mud.	21
9. June 11.	Off Gull Edge. Rakes drawn 300 yards. Depth 4 fathoms. Sea-bed rocks and mud.	7
10. June 11.	Making toward Gull Edge more or less opposite way from 9. Rakes drawn 350 yards. Depth 7 fathoms. Sea-bed rocks and mud.	10
11. June 11.	Off Indian point, adjacent to village. Rakes drawn 150 yards. Depth 4 fathoms. Sea-bed mud.	6
12. June 13.	Off Goat and Steven's island. Rakes drawn 400 yards. Depth 5 fathoms. Sea-bed rocks and mud.	9
13. June 13.	Between Bachmann's and Meisner's islands and Steven's and Goat islands. Rakes drawn 600 yards. Depth 5 fathoms. Sea-bed rocks and mud.	37
14. June 13.	Off Goat island making toward Billy Andrew's island. Rakes drawn 900 yards. Depth 5 fathoms. Sea-bed mud.	21
15. June 14.	Off Billy Andrew's island making toward Goat island. Rakes drawn 600 yards. Depth 5 fathoms. Sea-bed mud.	12
16. June 14.	Off Goat island making toward Meisner's island. Rakes drawn 900 yards. Depth 7 fathoms. Sea-bed mud.	17
17. June 14.	Off Meisner's island making toward Goat island, and reaching opposite side of that island from 16. Rakes drawn 500 yards. Depth 6 fathoms. Sea-bed mud.	12
18. June 18.	About 1½ miles off Tancook and making back towards Tancook with the tide. Rakes drawn 400 yards. Depth 16 fathoms. Sea-bed gravel and stones.	1
19. June 18.	About three-fourth mile off Jocklecap and some 3 miles off Tancook. Rakes drawn 400 yards. Depth 13 fathoms. Sea-bed smooth with some rocks.	36
20. June 18.	Repetition of previous raking (19) from much the same starting point. Rakes drawn 400 yards. Depth 13 fathoms. Sea-bed smooth and some stones.	40
21. June 22.	Off Bella island. Rake drawn 200 yards. Depth 9 fathoms. Sea-bed rocky.	3
22. June 22.	Between Bella and Ernst islands. Rake drawn 200 yards. Depth 8 fathoms. Sea-bed rock, sand and mud.	9
23. June 22.	Among the islands: Ernst, Bella and Heisler's. Rake drawn 250 yards. Depth 9 fathoms. Sea-bed rock and sand.	6
24. June 22.	Along the opposite side of Heisler's island. Rake drawn 400 yards. Depth 6 fathoms. Sea-bed rocky and sand.	2
25. June 22.	Between Heislars and Ernst islands. Rake drawn 300 yards. Depth 9 fathoms. Sea-bed rock and sand.	3





Tabulation showing the proportions of male and female scallops according to numbers and sizes for 1927:—

Inches	Males	Females	Totals
2.....	1	.....	1
2 $\frac{1}{8}$ .....	.....	1	1
2 $\frac{3}{8}$ .....	1	2	3
2 $\frac{5}{8}$ .....	.....	2	2
2 $\frac{7}{8}$ .....	1	2	3
3.....	1	1	2
3 $\frac{1}{8}$ .....	2	1	3
3 $\frac{3}{8}$ .....	4	2	6
3 $\frac{5}{8}$ .....	3	2	5
3 $\frac{7}{8}$ .....	2	4	6
3 $\frac{9}{16}$ .....	3	4	7
3 $\frac{11}{16}$ .....	9	2	11
3 $\frac{13}{16}$ .....	3	3	6
3 $\frac{15}{16}$ .....	11	6	17
4.....	4	10	14
4 $\frac{1}{8}$ .....	14	18	32
4 $\frac{1}{4}$ .....	17	12	29
4 $\frac{3}{8}$ .....	13	7	20
4 $\frac{5}{8}$ .....	9	10	19
4 $\frac{7}{8}$ .....	6	5	11
4 $\frac{9}{16}$ .....	3	2	5
4 $\frac{11}{16}$ .....	1	5	6
5.....	3	4	7
5 $\frac{1}{8}$ .....	2	2	4
5 $\frac{1}{4}$ .....	3	1	4
5 $\frac{3}{8}$ .....	.....	.....	2
5 $\frac{5}{8}$ .....	3	5	8
5 $\frac{7}{8}$ .....	5	4	9
5 $\frac{9}{16}$ .....	3	4	7
6.....	.....	6	6
6 $\frac{1}{8}$ .....	3	2	5
6 $\frac{1}{4}$ .....	1	3	4
6 $\frac{3}{8}$ .....	1	8	9
6 $\frac{5}{8}$ .....	4	4	8
6 $\frac{7}{8}$ .....	.....	1	1
6 $\frac{9}{16}$ .....	.....	2	2
7.....	1	.....	1
7 $\frac{1}{8}$ .....	1	.....	1
7 $\frac{1}{4}$ .....	.....	.....	.....
	140	147	287

The above tabulation shows that the number of male scallops and the number of female are approximately equal, and this is in keeping with what in general has been found to be the case through the investigations of previous years in Mahone bay, or indeed in the investigations made elsewhere, so that the combined data reveal that the proportion of either sex virtually stands at fifty to fifty per cent.

Two of the scallops included in the tabulation were old and sagged. One of them, a female (6 $\frac{1}{4}$  inches) was not so far gone as to hinder the determination of its sex. The other (5 $\frac{7}{8}$  inches) was judged at the time to be a female with a query mark, but has been placed with the females in the tabulation.

There is something to point out here. Only within a degree is the size of a scallop a criterion of senility, or in other words some scallops are full grown and about to die when of a smaller size than others are, and the above mentioned two present an instance of that.

Tabulation showing the proportion of scallops 4 inches and under to those of over 4 inches, according to the rakings:—

## INDIAN POINT—JUNE 8-17

Rakings	Four inches or under	Over four inches	Total
1.....	2	8	10
2.....	3	6	9
3.....		1	1
4.....	1	3	4
5.....			0
6.....		3	3
7.....		8	8
8.....		21	21
9.....	2	5	7
10.....	3	7	10
11.....		6	6
12.....	3	6	9
13.....	8	29	37
14.....	8	13	21
15.....	6	6	12
16.....	5	12	17
17.....	1	11	12
	42	145	187

## TANCOOK—JUNE 18

18.....		1	1
19.....	14	22	36
20.....	15	25	40
	29	48	77

## ERNST ISLAND—JUNE 22

21.....	1	2	3
22.....	1	8	9
23.....		6	6
24.....		2	2
25.....		3	3
	2	21	23

## RECAPITULATION

Indian Point.....	42	145	187
Tancook.....	29	48	77
Ernst Island.....	2	21	23
	73	214	287

List of the Fauna, in general, brought up by the rakes.

*Sponges*.—One attached to a stone, another attached to a horse-mussel, and another attached to a horse-mussel valve.

*Coelenterates*.—Hydroids attached to above mentioned horse-mussel valve; several sea-anemonies.

*Echinoderms*.—Of these sea-urchins were the most numerous, although they were not in such excessive numbers as to seriously derange a balance of the fauna in general. As a rule they occurred in the rakes from one to several,

seldom none, but there were a few places notably off Gull Edge and among the islands, such as Ernst and Bella islands, where they were more or less numerous.

The number of sand-dollars, and also of brittle-stars (Ophiurians) and star-fishes inclusive of five-rayed and many-rayed kinds was not great.

At one part of the bay sea-cucumbers constitute a pest, as was ascertained in the first place during previous seasons. This place is situated off the west coast of Tancook extending for at least about  $1\frac{1}{2}$  miles. There in the season past only one scallop,  $4\frac{1}{2}$  inches, was obtained in a raking of some 400 yards.

*Annelids*.—A few of different kinds, some housed in tubes.

*Crustaceans*.—A crab (*Hyas*), a hermit-crab, a prawn, a shrimp.

*Mollusks*.—Some 10 horse-mussels, a cockle valve, 2 chitons, a so-called conch (*Lunatia*), 3 slipper-shells (*Crepidula*) attached to scallops obtained between Bella and Ernst Islands.

*Tunicates*.—Two ascidians.

*Fishes*.—Two skates, two skate egg-capsules, a flat fish.

The above list is presented in order to show the sort of living organisms that occur in Mahone bay other than scallops, and also to convey an idea as to their respective quantities. It may seem that echinoderms (sea-urchins, sand-dollars, brittle-stars, star-fishes, sea-cucumbers) are the most plentiful, and that of these sea-urchins are the most numerous. In general, however, sea-urchins or other echinoderms at the present time are not in such numbers so as to seriously affect the scallops in Mahone bay. As already pointed out urchins were fairly numerous at one or two localities, and at a spot about one and a half miles off Tancook, where sea-cucumbers occur, only one scallop was obtained.

#### NOTES

It may be interesting to state that by examining the gonads of the smallest scallops obtained it was found that such, in proportion to the sizes of the scallops, were heavily charged with the sex elements.

There are really three distinct species of scallop occurring in our maritime waters. Besides our own commercial species, the giant scallop (*Pecten tenuicostatus*), the species (*P. irradians*), commercially used in the United States, to a degree overlaps the United States border and is occasionally found in Mahone bay. During the past season a few scallops, mostly very tiny, were found in that bay and noted as *P. irradians*. Whilst engaged in exploratory work, however, off Miminegash, P.E.I., in July, two specimens of a third species (*P. islandicus*) were brought up by the drag, and being of full size I was able to identify them. This European species named after Iceland, parallels the case of *P. irradians* in overlapping, but from an opposite direction, into our maritime waters. As perchance the third species (*P. islandicus*) may casually make its way even as far southward as Mahone bay, possibly some of the very small or very young scallop specimens, which from time to time have been come across in that bay, may have been referable to *Pecten islandicus* instead of to *P. irradians* for at such an early stage of growth there might have been little to definitely distinguish them.

#### EXPLORATORY WORK CARRIED ON IN SEARCH OF AREAS WHERE SCALLOPS EXIST IN PAYING QUANTITIES AT COASTS OF THE THREE MARITIME PROVINCES

In this work considerable parts of the inshore waters of the Maritime Provinces were explored, and in the search for scallop areas close attention was given to the nature of the sea-beds in order to study out reasons why scallops are plentiful in some localities, scanty in others, and in others again altogether absent.



The patrol-boat *Mildred McColl* was placed at disposal for the work, and the coasts explored were these:—

*Gulf of St. Lawrence.*—That part of the coast of Prince county, P.E.I., embraced between Alberton and North point.

*Strait of Northumberland.*—That part of the coast of Prince county, embraced between Nail Head and Cape Wolfe; those parts of the coasts of Kent county, N.B., embraced between Buctouche and Cote Ste. Anne and between Richibucto and Point Sapin; that part of the coast of Nova Scotia operated from Wallace as a starting point and embracing off: Oak island, McDonald's cove, and cape John; and that part of the coast of Pictou county, N.S., off Big island, Merigomish.

*East Coast of Nova Scotia facing the Atlantic.*—Chedabucto bay, Guysboro county, and off cape Hogan, cape Breton; Whitehead, and Country harbour and neighbouring waters, Guysboro county; and Port Dufferin, Halifax county.

As a result of the work I can confidently assert that there are places where fishermen need never go in hope of getting scallops, for at such places they will never find them.

There are two very opposite reasons why scallops do not exist in plenty at certain places in particular. Whilst they can exist and thrive in mud of a certain consistency they cannot among the great wastes of soft mud such as were come across in the explorations at some parts of the Strait of Northumberland where hardly any living organisms of any sort exist.

On the other hand they cannot thrive at places infested with great multitudes of sea-urchins, sand-dollars, or sea-cucumbers, and although such fishes as skates and flat-fishes, which are endowed with great freedom of locomotion, find in such compacted masses over which they can easily move about a congenial haunt, they also only add to the conditions that occasion the absence of scallops from places of the kind.

In the search for scallops then, two things in particular should be kept in mind, viz: the material nature of the sea-beds and the kinds and numbers of the living organisms that have established themselves upon the beds to the exclusion of the scallops.

The nature of the sea-beds where scallops occur are diverse and varied. The composition may be of rock, gravel, sand, or even mud of a certain consistency, and with those materials, either when single or combined, there may be growths of sea-weeds and empty mollusk shells.

The mere nature of the sea-beds, however, will not account for why the scallop lives and thrives at certain localities, whilst it is not to be found at others where the physical nature of the beds, that is in so far as the materials that compose them are concerned, is essentially the same. The problem goes deeper, but in passing it may be said, there need be no fear of any serious decline in their numbers in so far as nature is concerned where once the scallop has successfully established itself.

The influence of special environment, whether in relation to the composition of the sea-bed or the kinds and numbers of living organisms upon the bed, is a reason why scallops are sometimes to be found in plenty at a certain place, whilst at an adjoining place they may not exist at all or may be so few in numbers as to be purely negligible. There is evidence to show that, barring the depleted state which owing to injudicious and over fishing the scallop had been reduced to, Mahone Bay is an instance of a place where scallops have been living and thriving, standing apart from an adjoining place where it would seem such has not been the case.

In the year 1926 an examination was made at a spot about one mile beyond the boundary of the bay and about two miles off Big Duck island. The nature of the sea-bed was composed of smooth sand with minute pebbles, and over this two rakes were drawn some 300 yards. The work, irrespective of the nature of the bottom, was heavy and laborious and had to be desisted or risk the loss of the rakes.

The organic material brought up consisted of 186 sand-dollars, a number of sea-urchins, two sea-cucumbers, a number of dead bivalve mollusk shells but no dead scallop shells, kelp and a small quantity of another kind of seaweed, and one scallop 6 inches in length.

Nowhere within the bay itself are sand-dollars, or any other sort of echinoderms, to be found in such excessive numbers.

A second drag, of some 300 yards, was made with the two rakes towards the boundary of the bay, starting from within the line and apparently dragging over and beyond it, the rakes in that case being lifted after having recrossed the line.

This drag, being adjacent to, or partly at most just over the line, is of consequence in a consideration of how in general the fauna is locally distributed.

The nature of the sea-bed was rocky, and the organic material brought up consisted of two or three sand-dollars, some sea-urchins, a many-rayed star fish, a sea-cucumber, a few broken bivalve mollusk shells including one or two scallop shells, a chiton on a stone, kelp, and 45 scallops measuring from  $3\frac{1}{4}$  to  $5\frac{3}{4}$  inches in length.

The nature of the sea-bed of the Buctouche-Cote Ste. Anne investigation which was made under the work of exploring for scallops in 1927, was mostly sandy, but there were parts where it was rocky or stony. Yet the suitable material composition of the sea-bed was counteracted by multitudes of sea-urchins, sand-dollars and sea-cucumbers, among which flatfishes, skates, crabs, etc., were moving about, and no scallops in drags totalling 3,800 yards were obtained.

The material composing the sea-beds therefore, in such cases as given above, will not solely account for either the absence or presence of scallops, for much is attributable to the kinds of organisms, and their numbers, indigenous to the places where respectively they do or do not occur.

There are places at the maritime coasts where a very varied but well balanced fauna exists and thrives. The fine red-sand-stone formation of which Prince Edward Island is composed affords an admirable instance of a place of the kind. The coasts of Prince county, P.E.I., differ considerably, either in the material composition of its sea-beds or in the manner of distribution of the living organisms indigenous to those beds, from those of all the other coasts where explorations were made in 1927.

The sea-beds there, both in the gulf and strait, are strewn with great numbers of clean and well preserved shells of bivalve mollusks, among which there exists just such a fauna in which the scallop has its part, and which, in the two coasts as taken together, embraces such living forms as horse-mussels and other bivalve mollusks; univalve mollusks; hermit-crabs; sea-urchins, sand-dollars, and star-fishes, but more or less in moderate numbers; tunicates; annelids; sea-anemonies; and sponges. Of these any manifest harm occasioned to the scallops seemed to be, when the beds were examined, on the part of the sponges. These were all confined, however, to local spots in the gulf, and any harm the sponges seemed to cause was simply that sometimes, as massive growths on the shells, the scallops were heavily laden down with them.

Paralleling as much as possible what had been done on the Prince Edward Island side of the strait, explorations were made on the New Brunswick side,



but after extensive raking with far less success. Thus, out of some 11,625 yards drawn only 69 scallops were obtained, and many of those rakings yielded none, whilst it was only at points bordering towards where they had been found more or less plentiful when approached from Prince Edward Island, that there was any manifest increase in the numbers. This was in marked contrast to the findings on the Prince Edward Island side, where out of 3,775 yards 253 scallops were obtained. Light is thus thrown on the manner in which the scallops are distributed at the northern terminus of the strait of Northumberland, and as I apprehend the scallop resource in the two provinces, taken in toto, is one and the same, bearing this in view, the only way apparently that New Brunswick fishermen could profitably engage in scallop fishing would be by going out from their own coast for at least ten miles until they got to where the scallops exist in greater numbers as approached from Prince Edward Island.

The scallops of the gulf differed in certain physical respects from those of the strait. In general they presented a clearer and more attractive appearance, but although usually of good size, none were found exceeding 6 inches across. Off Alberton,  $3\frac{1}{4}$  miles SE., in one drag over 300 yards, two rakes being used, no less than 187 scallops were obtained.

In the Nova Scotian part of the Northumberland strait explorations were made starting from Wallace, Cumberland county, and off Big island, Merigomish, Pictou county. At both these places there were great wastes of the soft mud of which mention has already been made.

In the former investigation the boat cruised about points beyond the harbour until, in so far as could be gathered, abreast of shores of Pictou county. Great stretches of the sea-bed in this region were composed of the soft mud in which hardly any living organisms of any sort existed, save an occasional stray crab or star-fish, and even where the bed was composed of sand or rock the effect of those great wastes was maintained, so that the fauna, although sometimes varied as to kind, was generally scarce in numbers. The whole environment was unadapted as a habitat of the scallop, and out of drags covering some 9,925 yards only 25 scallops were found. Scallops therefore do not exist at this part of the coast in any considerable numbers, let alone that they are not there in paying quantities.

As to the investigation made off Big island, the next and final one of the strait, the bed of the sea there was little else than a great waste of soft mud similar to that referred to under the Wallace investigation, so soft indeed that the material simply passed through the mesh of the drag as through a sieve, and when brought to the surface was as a rule entirely empty. Of living things there were exceedingly few, and in so far as scallops were concerned, out of drags totalling some 4,355 yards not a single scallop was obtained.

The final explorations were engaged in at various inshore waters of the east coast of Nova Scotia facing the Atlantic.

A very extensive examination was made of Chedabucto bay, but only nine scallops in all were found. The sea-bed of this bay is of very varied composition. According to spots the material consisted of rocks, stones, gravel, sand, or mud. At spots there were growths of kelp or of sponges, and at spots again sunken or dead eel-grass, sea-weeds, or other materials were mixed in a great mass. Instead of the clean and well-preserved mollusk shells such as were found strewn upon the sea-beds at coasts of Prince county, P.E.I., there were worn or broken valves of mollusk shells often in more moderate numbers, and they included some valves of scallop shells. The faunal forms were as a rule multitudinous but distributed very irregularly, there being spots where no living thing of any kind was to be found.



The present condition therefore of Chedabucto bay with its numerous sea-urchins, mixed with which were sand-dollars, ophiurians, star-fishes, sea-cucumbers, sponges, hydroids, sea-anemonies, crabs, dead barnacles, mussels and other mollusks, tunicates, flat-fishes, etc., is little other than a heterogeneous wilderness altogether unadaptable as a habitat of the scallop, and that any scallops exist there at all is only by casual occurrence.

At Whitehead, Country harbour and adjacent localities, and Port Dufferin no scallops were obtained.

At Whitehead the sea-bed was composed of sand, stones, mud, and muck, with growths of sea-weeds, and there were valves of mollusk shells, including some valves of scallop shells. At one spot among the weeds there were multitudes of sea-urchins; two sand-dollars were brought up with the muck; otherwise besides two horse-mussels, a limpet, a tunicate, and an egg-capsule of a skate, practically no faunal forms were found.

At Country harbour, including Isaac's harbour, cape Mocodome, etc., the sea-bed was composed of rocks and mud. At a spot among the mud at Country harbour there were numerous star-fishes and a flat-fish; a few star-fishes, a sea-urchin, and *Spirorbis* attached to bits of sea-weed were found where the sea-bed was composed of soft mud at Isaac's harbour; there were lots of sea-urchins on a hard bottom at Cape Mocodome; otherwise the faunal forms were few or none at all. A few valves of mollusk shells, including one valve of a scallop shell, were found at cape Mocodome.

Off Port Dufferin the sea-bed was composed of rocks, gravel, and mud. Multitudes of sea-urchins were found at a locality where the sea-bed was composed of rock and gravel with sea-weeds; otherwise except some star-fishes and a horse-mussel no faunal forms were found.

It need not be conjectured from the preceding paragraphs that all the inshore waters of Guysboro and Halifax counties must necessarily be entirely destitute of scallops, and in measure it is already known that such is not the case. A complete exploration, however, would require to be made before it can definitely be known where the scallops exist and where in general they do not in those inshore waters, as the following evidence may tend to show.

At Ecum Secum, which is situated between those counties, an investigation was made in 1926 and 207 scallops were obtained. It is true that although the occurrence of scallops at that place fell short of what had been expected through representations, nevertheless in proportion to the size of the area, scallops both on the Halifax county side and on the Guysboro county side were found to be there. On the Halifax side in seven rakings there were 64 scallops and on the Guysboro side in six rakings 143 scallops. Moreover, judging by heaps of shells which were seen and which had been lying on the land since 1925, and from heaps of shells seen at wharves or lying in the water, it was apparent that considerable fishing had been engaged in. The indications, however, were that owing to the circumscribed size of the area extensive fishing could not be indefinitely engaged in, and the circumstance of having in thirteen rakings procured 207 scallops is simply mentioned as an instance of a locality where scallops exist in contradistinction to other localities at coasts of those two counties where it was found they do not exist.

A complete exploration therefore of the inshore waters of Halifax and Guysboro counties is as yet a desideratum in view of its being fully known where at that part of the coast of Nova Scotia facing the Atlantic the scallop areas are.

## DATA OF DRAGS

1927	Scallops
1. July 27. Rake drawn 275 yards, $2\frac{1}{2}$ miles W. by $N\frac{1}{4}$ N. off Miminegash. Depths at start and finish, 9-10 $\frac{1}{2}$ fathoms. Nature of sea-bed sand with dead scallop and other bivalve shells. Faunae, a few sand-dollars and a hermit crab. . . . .	1
2. July 27. Rake drawn 300 yards, $2\frac{1}{2}$ miles W. by N, off Miminegash. Depths at start and finish 11 $\frac{1}{2}$ -11 fathoms. Nature of sea-bed sand with dead scallop and other bivalve shells. Faunae, star-fish, 2 tiny sea-urchins, a few sand-dollars, a horse-mussel. . . . .	28
3. July 28. Rake drawn 600 yards, $2\frac{1}{2}$ miles W. off Miminegash. Depths at start and finish 11 $\frac{1}{2}$ -11 $\frac{1}{2}$ fathoms. Nature of sea-bed sand with dead scallop shells and a stone. Faunae, a few sand-dollars, 2 horse-mussels, one attached to pebbles, 4 specimens of a bivalve mollusk ( <i>Cythaerea</i> ) . . . . .	58
4. July 28. Rake drawn 500 yards, $2\frac{1}{2}$ miles W. off Miminegash. Depths at start and finish 11 $\frac{1}{2}$ -11 $\frac{1}{2}$ fathoms. Nature of sea-bed sand with dead scallop shells and a stone. Faunae, sand-dollars and a specimen of <i>Cythaerea</i> . . . . .	25
5. July 28. Rake drawn 450 yards, 2 miles $W\frac{1}{4}$ S. off Miminegash. Depths at start and finish 8-10 fathoms. Nature of sea-bed sand, rocks and pebbles (red sand-stone)—a piece of kelp. Faunae, a hermit-crab and 6 horse-mussels. . . . .	8
6. July 28. Rake drawn 300 yards, 3 miles W. by $N\frac{1}{2}$ N. off Miminegash. Depths at start and finish, 12-11 $\frac{1}{2}$ fathoms. Nature of sea-bed sand and rocks. Faunae, 6, 5-rayed and 2, 6-rayed star-fish, some horse-mussels. . . . .	39
7. July 29. Rake drawn 300 yards, $7\frac{1}{2}$ miles N.W. $\frac{1}{4}$ N. off Miminegash. Depths at start and finish 17-17 fathoms. Nature of sea-bed gravelly with numbers of old dead scallop shells. Faunae, 1, 5-rayed, 3, 6-rayed and 2 many-rayed star-fish (one of the 6-rayed with a gastropod in its mouth), a number of sea-urchins, a male <i>Pecten islandicus</i> . . . . .	47
8. July 29. Rake drawn 250 yards, $8\frac{1}{2}$ miles N.W. off Miminegash. Depths at start and finish 17 $\frac{1}{2}$ -18 fathoms. Nature of sea-bed gravelly. Faunae, 6 and many-rayed star-fish, a male specimen of <i>Pecten islandicus</i> . . . . .	30
9. July 29. Rake drawn 500 yards, 9 miles N.W. off Miminegash. Depths at start and finish 20-20 fathoms. Nature of sea-bed mud. Faunae, sea-mouse, 2 sea-urchins, 2 ophiurians, 3 valves of <i>Cythaerea</i> . . . . .	0
10. July 29. Rake drawn 300 yards, $6\frac{1}{2}$ miles W.N.W. off Miminegash. Depths at start and finish 17-14 fathoms. Nature of sea-bed sand with dead scallop and other bivalve shells. Faunae, 2 large many-rayed star-fish, a few sea-urchins, and some sand-dollars. . . . .	17
11. August 2. Rakes drawn 600 yards, 2 miles off land between Alberton and Cape Kildare. Depths at start and finish 13-14 fathoms. Nature of sea-bed sandy with a few dead bivalve shells ( <i>Macra</i> and <i>Cythaerea</i> ). Faunae, whelk egg-capsules attached to one of the scallops. Besides the Fundy rake the fisherman engaged used a Mahone rake. . . . .	3
12. August 2. Rakes drawn 500 yards, some 5 miles off Cape Kildare. Depths at start and finish 14-14 fathoms. Nature of sea-bed sandy with dead bivalve shells and a piece of kelp. Faunae, capsules of round whelk or so-called conch ( <i>Lunatia heros</i> ), and capsules of whelk on a dead valve or <i>Macra</i> , a number of sand dollars, and two 5-rayed star-fish. One of the scallops obtained was smashed and a broken piece of another valve seemed to belong to it. . . . .	15
13. August 3. Rakes drawn 600 yards, 5 miles S.E. off Alberton. Depths at start and finish 13-12 $\frac{1}{2}$ fathoms. Nature of sea-bed sandy and shelly. Faunae, 2 sea-urchins, 2 sand-dollars, a few specimens of <i>Cythaerea</i> . 2 of the scallops obtained were weighed with sponges, hydroids were attached to another, a tunicate to another, and a sea-anemone to still another. . . . .	5
14. August 3. Rakes drawn 375 yards, $5\frac{1}{2}$ miles S.E. off Alberton. Depth at start 13 $\frac{1}{2}$ fathoms. Nature of sea-bed sandy. Faunae, tunicates attached to a piece of wood, 2 sea-urchins, a few specimens of <i>Cythaerea</i> , and sand-dollars, 2 of the scallops obtained were heavily laden with sponges. . . . .	9
15. August 3. Rakes drawn 450 yards, 6 miles S.E. off Alberton. Depth at start and finish 15-13 $\frac{1}{2}$ fathoms. Nature of sea-bed hard sand with several dead bivalve shells. Faunae, a number of sea-urchins and sand dollars, a 5-rayed star-fish, a sponge with a living gastropod half buried in it, a very large sponge attached to one of the scallops obtained and whelk eggs-capsules on another, 2 specimens of <i>Cythaerea</i> . . . . .	7
16. August 3. Rakes drawn 400 yards, 6 miles E.S.E. off Alberton. Depths at start and finish 16 $\frac{1}{2}$ -15 $\frac{1}{2}$ fathoms. Nature of sea-bed sandy with some dead bivalve shells. Faunae, a number of sea-urchins, 2 sand-dollars, an annelid. Two of the scallops were heavily laden with sponges, and a larval form presumably of the lump-fish was found between the valves of one of the scallops. . . . .	3



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17. August 3. Rakes drawn 510 yards, 6 miles S.E.  $\frac{1}{4}$  E. off Alberton bell-buoy. Depths at start and finish 13-15 fathoms. Sea-bed with a number of dead bivalve shells, including part of an old valve of an oyster. Faunae, 2, 5-rayed, 1, 6-rayed and 1, many-rayed star-fish, 5 sea-urchins, 4 sand-dollars, egg capsules of roundwhelk (so-called conch), a hermit-crab with its shell encased in a sponge and one of the scallops obtained laden with a sponge. . . . . 5
18. August 4. Rakes drawn 600 yards, some 5 miles off cape Kildare and some 7 miles off Tignish. Depths at start and finish 13-16 fathoms. Nature of sea-bed sand and shells—a small stone. Faunae, 8, 5-rayed and 1 many-rayed star-fish, 2 sea-urchins, egg capsules and round whelk (*Lunatia*), and of common whelk (*Buccinum*) on a piece of an oyster valve, one of the scallops obtained ( $1\frac{1}{4}$  in.) was attached by byssus to the inside of a shell of *Cythaerea*, a specimen of spindle-shell (*Fusus decemcostatus*) . . . . . 9
19. August 4. Rakes drawn 500 yards,  $2\frac{1}{2}$  miles S.S.W. adjacent to where previous drag terminated. Depths at start and finish 14-14 fathoms. Nature of sea-bed sand and shells. Faunae, 9, 5-rayed star-fish, 1 sea-urchin, one or two sand-dollars, a specimen of a spindle shell. . . . . 1
20. August 4. Rakes drawn 400 yards, 5 miles E. by S. off Alberton. Depths at start and finish  $13\frac{1}{2}$ -13 fathoms. Nature of sea-bed sandy with shells. Faunae, 8 sand-dollars, a large 5-rayed star-fish, spindle-shell with sponge, hermit-crab, an annelid, a whelk. . . . . 9
21. August 4. Rakes drawn 700 yards, 4 miles E. by S. off Alberton. Depths at start and finish 13-12 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and rock. Faunae, round whelk egg-capsules, 2 specimens of *Cythaerea*. . . . . 6
22. August 5. Rakes drawn 700 yards, 4 miles E. by S. off Alberton. Depths at start and finish  $12\frac{1}{2}$ -12 fathoms. Nature of sea-bed sandy with dead bivalve shells. Faunae, some sand-dollars and egg-capsules of round whelk. . . . . 6
23. August 5. Rakes drawn 800 yards,  $3\frac{1}{2}$  miles S.E. off Alberton. Depth at start and finish  $12\frac{1}{2}$ -11 $\frac{1}{2}$  fathoms. Nature of sea-bed rocky with many dead scallop and other bivalve shells, stones and a little mud. Faunae, a few sea-urchins, a sand-dollar, a spindle-shell, a specimen of *Cythaerea*, a hermit-crab, pieces of egg-capsules of round whelk. . . . . 30
24. August 5. Rakes drawn 300 yards,  $3\frac{1}{2}$  miles S.E. off Alberton. Depths at start and finish  $12\frac{1}{2}$ -11 $\frac{1}{2}$  fathoms. Nature of sea-bed rocks and sand with shells. Faunae, some sea-urchins and some sand-dollars, sponge. . . . . 187
25. August 8. Rake drawn 700 yards, 5 miles S.E.  $\frac{1}{2}$  E. off North Point. Depths at start and finish  $16\frac{1}{2}$ -14 fathoms. Nature of sea-bed sand and rock (a piece of kelp and a stone). Faunae, practically none. . . . . 0
26. August 8. Rake drawn 400 yards, 3 miles E.S.E. off North Point. Depths at start and finish 12-12 fathoms. Nature of sea-bed rock. Faunae, 1, 5-rayed star, 2 horse-mussels, small tunicates. . . . . 0
27. August 8. Rake drawn 425 yards, about  $4\frac{1}{2}$  miles N.N.W. off Nail Head. Depths at start and finish 17-17 $\frac{1}{2}$  fathoms. Nature of sea-bed sandy (2 scallop valves). Faunae, none. . . . . 0
28. August 8. Rake drawn 500 yards, about  $5\frac{1}{2}$  miles N. by W. off Miminegash. Depths at start and finish 14-16 fathoms. Nature of sea-bed sandy with numerous dead bivalve shells. Faunae, a basket-star, sponges, etc. . . . . 18
29. August 9. Rake drawn 700 yards,  $2\frac{1}{2}$  miles off cape Wolfe. Depth at start and finish 10-10 fathoms. Nature of sea-bed sandy, with dead scallop and other bivalve shells. Faunae, numbers of sand-dollars and a specimen of *Cythaerea*. . . . . 1
30. August 11. Rake drawn 450 yards, 3 miles W.N.W. off cape Wolfe. Depth at start and finish 10-5 $\frac{1}{2}$  fathoms. Nature of sea-bed rocky and sandy with great numbers of dead scallop and other bivalve shells, and a few stones. Faunae, some sand-dollars, a 5-rayed star-fish, a sponge, a hermit-crab. The scallop obtained was covered with sponge and annelid tubes. . . . . 1
31. August 11. Rake drawn 400 yards, 4 miles N.E.  $\frac{1}{2}$  N. off Buctouche Light. Depth at start and finish 5-4 $\frac{1}{2}$  fathoms. Nature of sea-bed rocky with great numbers of various sized stones which weighed down the dredge. Faunae, great numbers of sand-dollars, a 5-rayed star-fish, 4 crabs (*Cancer*), some sponges, a flat fish, 2 female skates, etc. . . . . 0
32. August 11. Rake drawn 400 yards,  $4\frac{1}{2}$  miles off Buctouche Light. Depth at start and finish 5-5 $\frac{1}{2}$  fathoms. Nature of sea-bed rocky with dead bivalve shells. Faunae, numerous sand-dollars, 2 crabs (*Cancer* and *Hyas*), a flat-fish, a female skate, an egg-capsule of a skate. . . . . 0



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33. August 12. Rake drawn 300 yards, about 3 miles S.E.  $\frac{1}{2}$  E. off Buctouche Beach Light. Depth at start and finish 4 $\frac{1}{2}$ -5 fathoms. Nature of sea-bed rocky and sandy, with dead bivalve shells (but none of them scallop shells) great numbers of stones. Faunae, numerous sand-dollars, 4 crabs (2 of them *Cancer*), 3 hermit-crabs, a male lobster 6 $\frac{1}{2}$  inches (released), a horse-mussel, specimen of *Astarte*, sponges, 2 female skates, also a tiny *Cancer*, specimen of *Mactra*. 0
34. August 12. Rake drawn 300 yards, 3 $\frac{1}{4}$  miles S.E. by E. off Buctouche Beach Light. Depth at start and finish 5 $\frac{1}{2}$ -6 fathoms. Nature of sea-bed sandy with dead bivalve shells. Faunae, great numbers of sand-dollars, a crab, a round whelk. 0
35. August 12. Rake drawn 375 yards, 5 miles N.E.  $\frac{1}{2}$  N. off Buctouche Beach Light. Depth at start and finish 7-7 fathoms. Nature of sea-bed sandy, with dead bivalve shells. Faunae, numerous sand-dollars, a round whelk, a male skate, specimens of *Crepidula fornicata* attached to two dead scallop shells. 0
36. August 12. Rake drawn 500 yards, 6 $\frac{1}{4}$  miles E  $\frac{1}{2}$  N. off Buctouche Beach Light. Depth at start and finish 8-8 fathoms. Nature of sea-bed sandy, with a few dead scallop and other bivalve shells. Faunae, numerous sand-dollars, 2 crabs (*Cancer*) one of them tiny. 0
37. August 13. Rake drawn 450 yards, 6 miles S.E.  $\frac{3}{4}$  E. off Cote Ste Anne (Chockfish River) and 6 $\frac{1}{2}$  miles from Buctouche Beach Light. Depth at start and finish 8-8 $\frac{1}{2}$  fathoms. Nature of sea-bed sandy, with a number of dead bivalve shells including a worn scallop valve 2 $\frac{5}{8}$  inches. Faunae, numerous sand-dollars, 2 flatfish, a male skate, a few sponges, an annelid in a sponge, some ophiurians. 0
38. August 13. Rake drawn 500 yards, 5 miles E. by S. off Cote Ste. Anne. Depth at start and finish 9-7 fathoms. Nature of sea-bed sandy with some dead bivalve shells and a large stone with sponge growth. Faunae, multitudes of sand-dollars, 3 male and 2 female skates and 2 egg-capsules of skates, a few crabs (*Cancer*). 0
39. August 13. Rake drawn 375 yards, 2 $\frac{1}{2}$  miles E. by S. off Cote Ste. Anne and 8 miles from Buctouche Beach Light. Depth at start and finish 7-6 fathoms. Nature of sea-bed sandy. Faunae, great multitudes of sand-dollars. 0
40. August 17. Rake drawn 450 yards, 3 $\frac{1}{2}$  miles E.N.E. off Richibucto bell-buoy. Depth at start and finish 10-10 fathoms. Nature of sea-bed sandy with a worn scallop shell. Faunae, sand-dollars, 2 specimens of *Cythaerea*. 0
41. August 17. Rake drawn 750 yards, 6 $\frac{1}{4}$  miles off Richibucto bell-buoy. Depth at start and finish 10-10 fathoms. Nature of sea-bed sand with a few scallop valves and valves of other mollusks. Faunae, numbers of sand-dollars, a crab (*Cancer*), 4 five-rayed star-fishes, numbers of *Cythaerea*. 3
42. August 17. Rake drawn 600 yards, 8 miles S  $\frac{1}{2}$  E. off Point Sapin. Depth at start and finish 10-12 fathoms. Nature of sea-bed, stones and sand with a number of broken scallop valves and a few valves of other mollusks. Faunae, 2 five-rayed star-fishes, a sand-dollar. 3
43. August 17. Rake drawn 600 yards, some 5 miles S.E. by S  $\frac{1}{2}$  S. off Point Sapin. Depth at start and finish 12-11 fathoms. Nature of sea-bed sandy with empty shells of *Cythaerea*. Faunae, numerous five-rayed star-fishes, some sand-dollars, piece of egg-capsule of round whelk (*Lunatia heros*). 0
44. August 17. Rake drawn 600 yards, 9 miles N. by E  $\frac{3}{4}$  E. off Richibucto bell-buoy. Depth at start and finish 7-9 fathoms. Nature of sea-bed stones and sand. Faunae, a flat-fish, a crab (*Cancer*), a five-rayed star-fish, a few sand-dollars, some bivalve mollusks (*Cythaerea*). 0
45. August 17. Rake drawn 900 yards, 1 $\frac{1}{2}$  miles N.E. by N  $\frac{1}{2}$  N. off Richibucto bell-buoy. Depth at start and finish 9-10 fathoms. Nature of sea-bed stones and sand. Faunae, a five-rayed star-fish, 2 sand-dollars. 0
46. August 19. Rake drawn 500 yards, 5 $\frac{1}{2}$  miles E.N.E. off Richibucto bell-buoy. Depth at start and finish 11-12 fathoms. Nature of sea-bed sandy (an empty shell and a valve of *Cythaerea*—a stone). Faunae, a five-rayed star-fish, a sand-dollar. 5
47. August 19. Rake drawn 600 yards, 7 $\frac{1}{2}$  miles E.N.E. off Richibucto bell-buoy. Depth at start and finish 12-13 fathoms. Nature of sea-bed sandy with a few stones. Faunae, 2 five-rayed star-fishes, a sea-urchin. 0
48. August 19. Rake drawn 475 yards, 6 miles E.N.E. off Richibucto bell-buoy. Depth at start and finish 13-12 fathoms. Nature of sea-bed sandy. Faunae, a flat-fish, a male crab (*Cancer*), a sand-dollar. 0
49. August 19. Rake drawn 500 yards, 4 $\frac{1}{4}$  miles off Richibucto bell-buoy, Depth at start and finish 12-11 fathoms. Nature of sea-bed rocks and sand with empty scallop shells. Faunae, barnacles on a large stone, 2 male crabs (*Cancer*), several small fishes (presumably larval forms of the lump-fish) between the valves of living scallops. 8

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50. August 19. Rake drawn 500 yards, 5 miles E. off Richibucto bell-buoy. Depth at start and finish 12-11 $\frac{1}{2}$  fathoms. Nature of sea-bed rocks and sand. Faunae, a few sand-dollars, several male crabs (*Cancer*), a female skate, 2 bivalve mollusks (*Cythaerea*)... 2
51. August 19. Rake drawn 550 yards, some 3 miles E $\frac{1}{2}$  N. off Richibucto Cape Light. Depth at start and finish 12-11 fathoms. Nature of sea-bed sandy. Faunae, hydroids... 0
52. August 19. Rake drawn 450 yards, 2 miles N.E. off Richibucto Cape Light. Depth at start and finish 8-11 fathoms. Nature of sea-bed stones and sand. Faunae, a mussel and part of a mussel (*Mytilus*), 2 sea-urchins, young sponges on a stone, an annelid, a few ophiurians... 0
53. August 20. Rake drawn 600 yards, 9 miles S.E. by S. off Point Sapin. Depth at start and finish 13-14 fathoms. Nature of sea-bed sandy with a scallop valve and a few valves of other mollusks. Faunae, numerous five-rayed star-fishes, a sand-dollar, 2 sea-anemonies on a dead bivalve shell... 1
54. August 20. Rake drawn 600 yards, some 10 miles S. by E $\frac{1}{2}$  E. off Point Sapin. Depth at start and finish 14-14 $\frac{1}{2}$  fathoms. Nature of sea-bed sandy with numbers of scallop and other bivalve shells. Faunae, several five-rayed and many-rayed star-fishes, some sea-urchins and sand-dollars, gastropod with sponge, whelk egg-capsules, portion of an egg capsule of round whelk, a sea-anemone. 23
55. August 20. Rake drawn 550 yards, 11 miles S.E.E. off Point Sapin. Depth at start and finish 14-13 $\frac{1}{2}$  fathoms. Nature of sea-bed sandy. Faunae, numerous five-rayed star-fishes, some sand-dollars, a whelk egg-capsule... 1
56. August 20. Rake drawn 500 yards, 9 miles S.E. $\frac{1}{2}$  S. off Point Sapin. Depth at start and finish 14-14 fathoms. Nature of sea-bed sandy with some shells of bivalve mollusks. Faunae, numerous five-rayed and many-rayed star-fishes, one or two sea-urchins, a crab (*Hyas*)... 20
57. August 22. Rake drawn 600 yards, 6 miles E $\frac{1}{2}$  S. off Cape Richibucto Light. Depth at start and finish 9-13 fathoms. Nature of sea-bed sandy. Faunae, numerous bivalve mollusks (*Macra*), hydroids... 0
58. August 22. Rake drawn 800 yards, 7 miles S.E. $\frac{1}{2}$  E. off Cape Richibucto Light. Depth at start and finish 14-16 fathoms. Nature of sea-bed stony and sandy with broken scallop valves and broken valves of other mollusks. Faunae, a few sand-dollars, a horse-mussel, an annelid... 3
59. August 22. Rake drawn 500 yards, 5 miles S.E. $\frac{1}{2}$  E. off Richibucto Cape Light. Depth at start and finish 10-9 $\frac{1}{2}$  fathoms. Nature of sea-bed sandy with bivalve mollusk shells. Faunae, numerous sand-dollars, a female crab (*Cancer*), a hydroid... 0
60. August 30. Rake drawn 550 yards, 6 $\frac{1}{2}$  miles N.E. $\frac{1}{2}$  E. off Oak Island, vicinity of Wallace, N.S. Depth at start and finish 12-14 fathoms. Nature of sea-bed muddy. Faunae, a five-rayed star-fish... 0
61. August 30. Rake drawn 575 yards, 7 miles N.E. $\frac{3}{4}$  E. off Oak Island. Depth at start and finish 12 $\frac{1}{2}$ -12 fathoms. Nature of sea-bed muddy with kelp. Faunae, none... 0
62. August 30. Rake drawn 600 yards, 7 miles N.E. by E. off Oak Island. Depth at start and finish 13 $\frac{1}{2}$ -14 fathoms. Nature of sea-bed mud. Faunae, a five-rayed star-fish... 0
63. August 30. Rake drawn 600 yards, 7 $\frac{1}{2}$  miles N.E. by E $\frac{1}{2}$  E. off Oak Island. Depth at start and finish 14-14 fathoms. Nature of sea-bed mud with kelp (2 scallop valves 2 inches and 3 inches). Faunae, a female crab (*Cancer*)... 0
64. August 30. Rake drawn 650 yards, 7 miles N.E. off Oak Island. Depth at start and finish 12 $\frac{1}{2}$ -14 fathoms. Nature of sea-bed mud. Faunae, none... 0
65. August 30. Rake drawn 600 yards, 3 $\frac{1}{2}$  miles N.E. by E. off Oak Island. Depth at start and finish 9-8 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and stones with kelp and a number of scallop valves. Faunae, a mussel (*Mytilus*)... 3
66. August 30. Rake drawn 400 yards, 3 $\frac{1}{2}$  miles N.E. by E. off Oak Island (a repeated drag). Depth at start and finish 8 $\frac{1}{2}$ -7 $\frac{1}{2}$  fathoms. Nature of sea-bed sand with kelp (2 broken scallop valves). Faunae, 5 horse-mussels (*Modiola*), a tiny sea-urchin, a few bi-valve mollusks (*Cythaerea*) 2 female crabs (*Cancer*) with eggs on the swimmerets, a specimen of *Crepidula fornicata* on one of the two scallops obtained... 2
67. August 31. Rake drawn 600 yards, 2 miles N.W. by N. off McDonald's Cove. Depth at start and finish 8-7 fathoms. Nature of sea-bed sand and rock with kelp and some dead scallop shells. Faunae, a skate, mussels (*Mytilus*), a sea-urchin, a sponge, annelid tubes on a scallop valve... 0



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68. August 31. Rake drawn 800 yards,  $2\frac{1}{2}$  miles N.N.E. off McDonald's Cove. Depth at start and finish 8-12 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and stones with some scallop valves and 3 shells of *Cythaerea*. Faunae, mussel (*Mytilus*) on a scallop valve, 6 very large five-rayed star fishes, 9 sea-urchins one being very large, barnacles, on a mussel, an orphiurian. . . . . 2
69. August 31. Rake drawn 800 yards, 3 miles N.N.E. off McDonald's cove, Depth at start and finish 13-12 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and some stones with some mollusk shell valves. Faunae, a male crab (*Cancer*), 11 five-rayed star fishes 8 being very large, quite a number of sea-urchins, a few mussels, *Anomia* on one of the scallops obtained, a small fish (presumably a larval form of the lump-fish). . . . . 2
70. August 31. Rake drawn 600 yards,  $2\frac{1}{2}$  miles E.N.E. off Cape John. Depth at start and finish, 11 $\frac{1}{2}$ -10 fathoms. Nature of sea-bed rock, sand, and mud with shells of bivalve mollusks. Faunae, one or two sand-dollars, a five-rayed star fish, some mussels, a larval form presumably of lump-fish. . . . . 11
71. August 31. Rake drawn 575 yards, 2 miles N.E. of Cape John. Depth at start and finish 9-7 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and stones with kelp and valves of scallops. Faunae, mussels, egg-capsule of skate, sponges. . . . . 0
72. September 1. Rake drawn 675 yards, 4 miles N. by W. off Oak Island. Depth at start and finish 10-10 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
73. September 1. Rake drawn 575 yards, 4 miles N. by E. off Cape Cliff. Depth at start and finish, 9-9 $\frac{1}{2}$  fathoms. Nature of sea-bed sand and stones with kelp and some scallop valves. Faunae, 5 male crabs (*Cancer*), 2 mussels. . . . . 5
74. September 1. Rake drawn 650 yards, 2 miles N. by E. off Cape Cliff. Depth at start and finish 10-7 $\frac{3}{4}$  fathoms. Nature of sea-bed sand and stones with kelp and a few scallop valves. Faunae, a mussel, sponges on a large stone. . . . . 0
75. September 1. Rake drawn 675 yards,  $1\frac{1}{2}$  miles S.E.  $\frac{1}{2}$  S. off Oak Island. Depth at start and finish 8-7 fathoms. Nature of sea-bed mud and rocks with bits of kelp. Faunae, one or two sand-dollars, 3 mussels. . . . . 0
76. September 7. Rake drawn 775 yards, 3 miles N.N.E. off Big Island, Merigomish vicinity. Depth at start and finish 12-12 $\frac{1}{2}$  fathoms. Nature of sea-bed mud. Faunae, a five-rayed starfish or two. . . . . 0
77. September 7. Rake drawn 825 yards,  $2\frac{1}{2}$  miles N.E.  $\frac{1}{2}$  N. off Big Island. Depth at start and finish 14-14 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
78. September 7. Rake drawn 875 yards, 2 miles N.E. by N.  $\frac{1}{4}$  N. off Big Island west. Depth at start and finish 12-10 fathoms. Nature of sea-bed mud. Faunae, 5 five-rayed starfishes. . . . . 0
79. September 7. Rake drawn 1,100 yards, 3 miles N.W. by N. west end off Big island. Depth at start and finish 10-9 fathoms. Nature of sea-bed mud with kelp. Faunae, a few hermit crabs, a female crab (*Cancer*), 7 five-rayed starfishes two of them tiny, sponges, 9 horse-mussels inside of one of which were a number of small living mussels. . . . . 0
80. September 10. Rake drawn 780 yards,  $5\frac{3}{4}$  miles N. off east end of Big island. Depth at start 14 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
81. September 12. Rake drawn 700 yards,  $2\frac{1}{2}$  miles S. by W.  $\frac{1}{2}$  W. off Red Head (dead reckoning). Depth at start and finish 13-13 $\frac{1}{2}$  fathoms. Nature of sea-bed rocks with some kelp. Faunae, tunicates, bryozoans, eggs presumably of some mollusk, hydroids, annelid tubes, tiny crustaceans, dead barnacles, all on a large stone with algal growth. . . . . 0
82. September 12. Rake drawn 675 yards, about one mile S. off Argus buoy. Depth at start and finish 13-14 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
83. September 12. Rake drawn 950 yards,  $\frac{1}{2}$  mile N. by E $\frac{1}{2}$  E. off Argus buoy. Depth at start and finish 13-13 fathoms. Nature of sea-bed sand with scallop (2 fragments), and other mollusk (*Cythaerea*) valves—a stone. Faunae, 5 sea-urchins, a star-fish (purple with 9 rays). . . . . 0
84. September 12. Rake drawn 1,050 yards,  $1\frac{1}{2}$  miles S.S.E. off Ragged Head (dead reckoning). Depth at start and finish 8 $\frac{3}{4}$ -11 $\frac{1}{2}$  fathoms. Nature of sea-bed rocky (9 scallop valves). Faunae, a large five-rayed star-fish. . . . . 1
85. September 12. Rake drawn 600 yards,  $2\frac{3}{4}$  miles S.W.  $\frac{1}{2}$  W. off Ragged Head. Depth at start and finish 11-20 fathoms. Nature of sea-bed rocks with algae. Faunae, 2 five-rayed star-fishes. . . . . 0
86. September 13. Rake drawn 700 yards,  $\frac{1}{2}$  mile S.W. off Manhasset Beach. Depth at start and finish 19-17 fathoms. Nature of sea-bed mud (7 scallop valves, a valve of *Cythaerea*, and a stone). Faunae, whelk egg-capsules on the scallop obtained, hydroids on the stone, a tunicate. . . . . 1



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87. September 13. Rake drawn 800 yards,  $\frac{1}{2}$  mile S.E. off Stewart's Point. Depth at start and finish 16-12 fathoms. Nature of sea-bed sandy with some shells of bivalve mollusks. Faunae, numerous sea-urchins, 6 five-rayed star-fishes, 2 horse-mussels one of them on a stone, a hybroid. . . . . 1
88. September 13. Rake drawn 800 yards, close to Guysboro bell-buoy. Depth at start and finish 12-11 $\frac{1}{2}$  fathoms. Nature of sea-bed mud and stones. Faunae, a number of sea-urchins, 4 five-rayed star-fishes, 5 flatfish. . . . . 3
89. September 13. Rake drawn 850 yards,  $\frac{1}{3}$  mile E. off Rigsby head. Depth at start and finish 7-9 fathoms. Nature of sea-bed rocks (a valve of a mollusk). Faunae, 4 sea-urchins, a flatfish. . . . . 0
90. September 13. Rake drawn 700 yards,  $\frac{3}{4}$  mile S.E.  $\frac{1}{2}$  E. off Guysboro Light. Depth at start and finish 10-10 fathoms. Nature of sea-bed rock and kelp and mud at the finish (a few *Cythaerea* valves). Faunae, 4 five-rayed star-fishes, 3 sea-urchins, 2 flatfishes, a female skate. . . . . 0
91. September 14. Rake drawn 850 yards, some  $\frac{3}{4}$  mile N.W.  $\frac{1}{4}$  W. off Bond's Point (dead reckoning). Depth at start and finish 10-14 fathoms. Nature of sea-bed sand. Faunae, a five-rayed star-fish. . . . . 1
92. September 14. Rake drawn 100 yards,  $\frac{1}{4}$  mile N.W. off Bond's Point (rake had to be drawn up on account of nets and trawls). Depth at start and finish 15-17 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
93. September 14. Rake drawn 450 yards,  $\frac{1}{4}$  mile N. off Halfway Cove. Depth at start and finish 18 $\frac{1}{2}$ -14 fathoms. Nature of sea-bed sandy with a few worn and broken scallop valves and valves of other mollusks. Faunae, none. . . . . 1
94. September 14. Rake drawn 1,200 yards,  $\frac{3}{4}$  mile W $\frac{1}{2}$  N. off Ragged Head at end of drag. Depth at start and finish 17-12 fathoms. Nature of sea-bed mud and sea-weed and sunken eel-grass (the sea-weed and other material in a great mass—a scallop valve). Faunae, several hermit-crabs, a female crab and a tiny crab (*Cancer*), numerous sea-urchins, 2 sea-cucumbers, several five-rayed star-fishes, an ophiurian, a horse-mussel, egg-capsule of skate, a flatfish. . . . . 0
95. September 14. Rake drawn 900 yards, one mile S. by E. off J. J. Callahan's property. Depth at start and finish 12-12 fathoms. Faunae, none save a valve of *Cythaerea*. . . . . 0
96. September 15. Rake drawn 675 yards, outside the bar in the vicinity of Guysboro. Depth at start and finish 9 $\frac{1}{2}$ -4 fathoms. Nature of sea-bed rocks with old scallop valves and valves of other mollusks. Faunae, multitudes of sea-urchins, some sand-dollars, a specimen of spindle shell (*Fusus decemcostatus*) a large *Cythaerea*. . . . . 0
97. September 15. Rake drawn 800 yards, at entrance to Guysboro harbour. Depth at start and finish 4-13 fathoms. Nature of sea-bed rocks and kelp. Faunae, a few sea-urchins, some sea-anemonies, a common mussel (*Mytilus*), a horse-mussel (*Modiola*), a flatfish. . . . . 0
98. September 15. Rake drawn 600 yards, in Guysboro Harbour. Depth at start and finish 8-12 fathoms. Faunae, numerous sea-urchins and sand-dollars, a five-rayed star-fish, 3 anemonies. . . . . 0
99. September 15. Rake drawn 625 yards, in Guysboro Harbour. Depth at start and finish 8-3 fathoms. Faunae, great masses of sponges, numbers of common mussels, anemonies on mussels and on stones, *Anomia*, sponges and a barnacle on one of them. . . . . 0
100. September 15. Rake drawn 550 yards, in Guysboro Harbour. Depth at start and finish 8-5 fathoms. Nature of sea-bed rocks and mud (a scallop valve). Faunae, numerous sand-dollars and sea-urchins, a specimen of *Cythaerea*, 2 horse-mussels. . . . . 0
101. September 21. Rake drawn 600 yards, 1 $\frac{1}{2}$  miles off Ryter's Point (fog). Depth at start and finish 20-19 fathoms. Nature of sea-bed mud. Faunae, a five-rayed star-fish, an ophiurian. . . . . 0
102. September 21. Rake drawn 675 yards, 1 $\frac{1}{2}$  miles S. off Ragged Head. Depth at start and finish 20-19 $\frac{1}{2}$  fathoms. Faunae, none, save a piece of an old worn scallop valve and a five-rayed star-fish seen when dropping out. . . . . 0
103. September 21. Rake drawn 800 yards, about 2 $\frac{1}{4}$  miles E. by S. off Ragged Head. Depth at start and finish 18-14 $\frac{1}{2}$  fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
104. September 21. Rake drawn 350 yards, 3 miles N. by E. off Queensport (thick fog). Depth at start and finish 17-21 fathoms. Nature of sea-bed mud. Faunae, none. . . . . 0
105. September 22. Rake drawn 750 yards, N $\frac{1}{2}$  W. off Bond's Point. Depth at start and finish 15-19 fathoms. Nature of sea-bed mud. Faunae, a specimen of *Cythaerea* with hybroid. . . . . 0

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106. September 22. Rake drawn 850,  $9\frac{1}{4}$  miles S.S.W. off J. J. Callahan's Bluff. Depth at start and finish  $17\frac{1}{2}$ -12 fathoms. Nature of sea-bed sand and gravel with bits of dead eel-grass and a shell of *Cythaerea*. Faunae, 5 five-rayed star-fishes, a specimen of *Astarte*, hydroids, a small crustacean, a larval form of a fish presumably of a lump-fish in the scallop obtained. . . . . 1
107. September 22. Rake drawn 800 yards,  $2\frac{1}{2}$  miles N.E.  $\frac{1}{2}$  N. off Dord Cove. Depth at start and finish  $12\frac{1}{2}$ -17 fathoms. Nature of sea-bed mud. Faunae, a hydroid, a bryozoan, eggs of some kind. . . . . 0
108. September 22. Rake drawn 750 yards,  $\frac{1}{4}$  mile SE. off Ragged head. Depth at start and finish 17-12 fathoms. Nature of sea-bed sand and mud (a small bit of kelp). Faunae, a five-rayed star-fish, a hydroid with eggs of some sort attached. . . . . 0
109. September 22. Rake drawn 900 yards, S. by  $W\frac{1}{2}$  off Keyes Pond. Depth at start and finish 16-15 fathoms. Nature of sea-bed muddy. Faunae, one or two five-rayed star-fish, an ophiurian . . . . . 0
110. September 22. Rake drawn 850,  $2\frac{1}{2}$  miles N. by  $E\frac{1}{2}$  E. off Queensport Light. Depth at start and finish 14-27 fathoms. Nature of sea-bed stones. Faunae, an acidian, hydroids. . . . . 0
111. September 24. Rake drawn 800 yards,  $2\frac{1}{2}$  miles N.E. by N. off Queensport. Depth at start and finish  $12$ - $23\frac{1}{2}$  fathoms. Nature of sea-bed stones (fragments of scallop valve, valve of *Cythaerea*). Faunae, none. . . . . 0
112. September 24. Rake drawn 875 yards,  $2\frac{1}{2}$  miles N.E. by E. off Queensport Light. Depth at start and finish 14- $24\frac{1}{2}$  fathoms. Nature of sea-bed stones (2 *Cythaerea* shells). Faunae, a basket-fish, a five-rayed star-fish, a specimen of *Cythaerea* full of eggs. . . . . 0
113. September 24. Rake drawn 775 yards,  $2\frac{1}{2}$  miles S.S.W. off Cape Argus. Depth at start and finish 12-16 fathoms. Nature of sea-bed rocks. Faunae, coelenterate. . . . . 0
114. September 24. Rake drawn 600 yards,  $2\frac{1}{4}$  miles S.S.W. off Cape Argus. Depth at start and finish 18-17 fathoms. Nature of sea-bed stones. Faunae, a basket-fish and fragment of same. . . . . 0
115. September 24. Rake drawn 875 yards, S. by E. off Cape Argus. Depth at start and finish 17-14 fathoms. Nature of sea-bed stones. Faunae, an acidian, hydroids and bryozoans on a stone, and on the same stone 2 or 3 tiny scallops about  $\frac{1}{4}$  of an inch in diameter—otherwise. . . . . 0
116. September 24. Rake drawn 900 yards,  $\frac{3}{4}$  mile S.W.  $\frac{1}{2}$  W. off Cape Argus. Depth at start and finish 13-20 fathoms. Nature of sea-bed rocks. Faunae, a star-fish with 9 rays. . . . . 0
117. September 26. Rake drawn 950 yards,  $2\frac{1}{2}$  miles  $S\frac{1}{2}$  W. off Cape Hogan Light, Cape Breton. Depth at start and finish 17-25 fathoms. Nature of sea-bed great quantities of kelp. Faunae, an annelid, a chiton. . . . . 0
118. September 26. Rake drawn 950 yards,  $2\frac{3}{4}$  miles W. by S. off Cape Hogan, C.B. Depth at start and finish 22-20 fathoms. Nature of sea-bed stones and kelp. Faunae, a few chitons. . . . . 0
119. September 26. Rake drawn 870 yards, 4 miles W. off Cape Hogan. Depth at start and finish  $16\frac{1}{2}$ -28 fathoms. Nature of sea-bed stones. Faunae, an anemone on a stone, 2 acidians to which hydroids, algae, etc., were attached. . . . . 0
120. September 27. Rake drawn 750 yards, at the head of Yankee harbour, Whitehead. Depth at start and finish 9-7 fathoms. Nature of sea-bed mud and sea-weeds. Faunae, practically none. . . . . 0
121. September 27. Rake drawn 1,100 yards, SSE. off Three Top Island, Whitehead. Depth at start and finish 6-17 fathoms. Nature of sea-bed sea-weeds (2 mussel valves). Faunae, multitudes of sea-urchins, a horse-mussel with a small one attached, a limpet. . . . . 0
122. September 27. Rake drawn 950 yards, north end of Price's Island, Whitehead. Depth at start and finish 13-11 fathoms. Nature of sea-bed muck (5 scallop valves one of them being *Pecten islandicus* and several valves of *Cythaerea*—a stone). Faunae, 2 sand-dollars. . . . . 0
123. September 27. Rake drawn 950 yards, off Fishermans Island west, Whitehead. Depth at start and finish 11-7 fathoms. Nature of sea-bed sand with kelp (4 scallop valves and a few stones). Faunae, a horse-mussel, a tunicate, egg-capsule of a skate. . . . . 0
124. September 27. Rake drawn 600 yards, south off White Island, Whitehead. Depth at start and finish 7-9 fathoms. Nature of sea-bed muddy. Faunae practically none. . . . . 0

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Scallops

125. September 29. Rake drawn 900 yards $\frac{3}{4}$ mile, S.E. $\frac{1}{2}$ S. off Mount Misery, County Harbour. Depth at start and finish 8-8 fathoms. Nature of sea-bed mud. Faunae, numerous five-rayed star-fishes, a flatfish. . . . .	0
126. September 29. Rake drawn 975 yards, 1 mile S.W.S. off Isaac's Harbour Light. Depth at start and finish 11-9 $\frac{1}{2}$ fathoms. Nature of sea-bed soft mud. Faunae, 5 five-rayed star-fishes, a sea-urchin, <i>Spirorbis</i> on bits of sea-weed. . . . .	0
127. September 29. Rake drawn 750 yards, $\frac{1}{2}$ mile N.E. off Country Harbour Head. Depth at start and finish 10-13 fathoms. Faunae, a five-rayed star-fish. . . . .	0
128. September 30. Rake drawn 400 yards, 300 yards E. by S. off Bell-buoy, Isaac's Harbour. Depth at start and finish 12-8 fathoms. Nature of sea-bed rocks. Faunae, none. . . . .	0
129. September 30. Rake drawn 450 yards, 300 yards west off Black Ledge, entrance to Isaacs's Harbour. Depth at start and finish 14-11 $\frac{1}{2}$ fathoms. Nature of sea-bed rocks with sea-weed. Faunae, several sea-urchins. . . . .	0
130. September 30. Rake drawn 1,500 yards, $\frac{3}{4}$ mile west off Island Harbour Light. Depth at start and finish 10-13 $\frac{1}{2}$ fathoms. Nature of sea-bed rocks with sea-weeds. Faunae, a five-rayed star-fish. . . . .	0
131. September 30. Rake drawn 1,050 yards, $\frac{1}{2}$ mile NNE. off cape Mocodome. Depth at start and finish 7-11 fathoms. Nature of sea-bed hard bottom with sea-weeds (a scallop valve and valves of various other mollusks). Faunae, lots of sea-urchins, 2 five-rayed star-fishes one very large, a small crab, egg-capsule of skate. . . . .	0
132. October 3. Rake drawn 975 yards in Port Dufferin Harbour. Depth at start and finish 10-6 fathoms. Nature of sea-bed rock, mud, and sea-weeds. Faunae, several five-rayed star-fishes. . . . .	0
133. October 3. Rake drawn 750 yards, 300 yards S.E. off Sandy Island, Port Dufferin. Depth at start and finish 8-9 fathoms. Nature of sea-bed rock, gravel, and sea-weeds. Faunae, multitudes of sea-urchins, a five-rayed star-fish, a horse-mussel. . . . .	0
134. October 3. Rake drawn 750 yards, 1 $\frac{1}{4}$ miles N.E. off Beaver Light, Port Dufferin. Depth at start and finish 19-20 fathoms. Nature of sea-bed, hard-bottom (marked gravel on chart). Faunae, 6 five-rayed star-fishes. . . . .	0
135. October 3. Rake drawn 1,250 yards, $\frac{1}{4}$ mile N.E. by N. off Beaver Light. Depth at start and finish 16-11 fathoms. Nature of sea-bed mud. Faunae, none. . . . .	0
136. October 3. Rake drawn 800 yards, 400 yards S.E. off Hardwood, Port Dufferin. Depth at start and finish 12-9 fathoms. Nature of sea-bed mud and sea-weeds. Faunae, none. . . . .	0

The following concerns what was ascertained as to the spawning functions of the scallop.

Throughout the period of the observations in the gulf of St. Lawrence and northern part of the strait of Northumberland, which extended from July 27 until August 22, there were no indications of spawning. The gonads in all the scallops were full and expanded, and in colour those of the males were a beautiful cream and those of the females a vivid red, which was in keeping with what had been ascertained at all other localities where my observations hitherto were engaged in.

After then, between August 30 and October 3, only 34 scallops, all told, were obtained, 25 under the Wallace investigation and 9 in that of Chedabucto bay, the particulars of which are as follows:—

#### Wallace

August 30. A female obtained off Oak island was on the eve of spawning.

August 31. In the case of one male and two females obtained off McDonald's cove, and of 2 males and 8 females obtained off cape John, spawning was underway, and a scallop (sex indeterminable) obtained off cape John was practically spawned out.

September 1. Of 5 scallops obtained off cape Cliff, in one male and 3 females spawning was underway and in one male spawning was advanced.



Thus, in some wise, by that time of the year the function of spawning was manifested in the instances of 20 out of 25 scallops. Nevertheless, except in the scallop of which the sex could not be determined, the colours of the gonads were still maintained and were even in some cases bright.

There was an interval of time (during which the Big Island investigation was engaged in, at which place no scallops were found) between the Wallace and Chedabucto bay explorations, and the following particulars concern what was ascertained, through the 9 scallops obtained, relative to spawning at the latter place.

#### *Chedabucto Bay*

September 12. Spawning in a male scallop was proceeding, but there were multitudes of sperms still in the gonad.

September 13. The gonad of a male was evidently caving in, but it still contained millions of sperms, and the creamy colour was still retained. In another male the milt was copious, and the gonad contained millions of sperms, the colour being still retained. The gonad of a female was getting spent, but it still contained numbers of eggs, and the red colour was retained. Another female had still numerous eggs in the gonad and the colour was retained. There was also another scallop (apparently obtained on the 13th) of which the sex was indeterminate as the gonad was spent of the sex elements and the colour was therefore faded out.

September 14. The gonad of a female was thinning out, but it still contained multitudes of eggs and the colour was vivid red. The gonad of another scallop, the sex of which could not be determined, was empty of the sex elements and the colour was faded out.

September 22. A scallop, possibly a female as there seemed to be the slightest tinge of red left was spawned out.

Such were the spawning conditions of the 9 scallops obtained at Chedabucto bay, between the dates of 12th and 22nd September, and I could tell by the conditions, that in general from then on the process would have been rapid, and have no doubt through my past experience that by the end of September spawning would practically have been over.

Mention is here made of two specimens of *Pecten islandicus* obtained a number of miles off Miminegash on July 29. This species of scallop occurs at coasts of Europe including Iceland (from whence it derives its name), and extends, but sparsely, into our Atlantic waters, and years ago I found it when dredging in the waters of the gulf of St. Lawrence. Both the specimens were males, and the condition of the gonad paralleled that of our own commercial scallop at that time of the year, being compact and full and of a similar creamy colour. The shells were handed over to Doctor Huntsman at the Experimental Station, Halifax.

The following tabulations of the measurements of scallop shells, which were prepared for Doctor Huntsman and delivered at the Experimental Station, Halifax, will illustrate the sizes and the proportion of males to females of the scallops, according to the respective sources from which they were obtained. The specimens queried mostly concern those of which the sex was indeterminate on account of the stage of development of the sex elements, so that the colours of the gonads, by which the sexes are distinguishable had faded out.

Besides those, however, a few were not determined for other reasons. The sex of a scallop attached by byssus to the inside of a shell of *Cythaerea*, owing to its small size ( $1\frac{1}{4}$  inches) was not determined, nor was that of another on account of the scallop being in bad condition, whilst in the case of a third the sex had not been ascertained for some unrecorded reason, as came to light on measuring the shell after the scallop itself had been disposed of.

## GULF—ABLERTON—NORTH PONT

Inches	Males	Females	?	Totals
1 $\frac{1}{4}$ .....	1		1	2
2 $\frac{1}{8}$ .....	2			2
2 $\frac{1}{2}$ .....	1	1		2
2 $\frac{1}{2}$ .....		1		1
2 $\frac{5}{8}$ .....		1		1
2 $\frac{3}{4}$ .....	2	2		4
3.....		2		2
3 $\frac{1}{4}$ .....		2		2
3 $\frac{3}{8}$ .....	1	2		3
3 $\frac{1}{2}$ .....	2	2		4
3 $\frac{5}{8}$ .....		3		3
3 $\frac{3}{4}$ .....	3			3
4.....	2	3		5
4 $\frac{1}{8}$ .....	5	3		8
4 $\frac{1}{4}$ .....	3	1		4
4 $\frac{3}{8}$ .....	1	2		3
4 $\frac{1}{2}$ .....	2	2		4
4 $\frac{5}{8}$ .....	2	1		3
4 $\frac{3}{4}$ .....	2	2		4
4 $\frac{7}{8}$ .....	7			7
5.....	1	5		6
5 $\frac{1}{8}$ .....	1	1		2
5 $\frac{1}{4}$ .....	4	3		7
5 $\frac{3}{8}$ .....	4	2		6
5 $\frac{1}{2}$ .....	2	1		3
5 $\frac{5}{8}$ .....	4			4
5 $\frac{3}{4}$ .....		1		1
5 $\frac{7}{8}$ .....	1			1
6.....		1		1
	53	44	1	98

## STRAIT.—PRINCE COUNTY, P.E.I.—KENT COUNTY, N.B.

Inches	Males	Females	?	Totals
2 $\frac{3}{8}$ .....	1			1
2 $\frac{1}{2}$ .....	1			1
2 $\frac{5}{8}$ .....	1			1
3.....	1	4		5
3 $\frac{1}{8}$ .....		4		4
3 $\frac{1}{4}$ .....	7	1		8
3 $\frac{3}{8}$ .....	7	4		11
3 $\frac{1}{2}$ .....	11	9		20
3 $\frac{3}{4}$ .....	1	4		5
3 $\frac{5}{8}$ .....	6	3		9
3 $\frac{3}{4}$ .....	2			2
3 $\frac{7}{8}$ .....	3	4		7
4.....	5	2	1	8
4 $\frac{1}{8}$ .....	7	3		10
4 $\frac{1}{4}$ .....	5	4		9
4 $\frac{3}{8}$ .....	7	10		17
4 $\frac{1}{2}$ .....	2	5		7
4 $\frac{5}{8}$ .....	5	5		10
4 $\frac{3}{4}$ .....	4	4		8
4 $\frac{7}{8}$ .....	8	3		11
5.....		2	1	3
5 $\frac{1}{8}$ .....	4	2		6
5 $\frac{1}{4}$ .....	2	1		3
5 $\frac{3}{8}$ .....		2		2
5 $\frac{1}{2}$ .....	1			1
5 $\frac{5}{8}$ .....		1		1
	91	77	2	170

WALLACE

Inches	Males	Females	?	Totals
3.....	1	1	.....	2
3 $\frac{1}{2}$ .....	.....	2	.....	2
3 $\frac{1}{2}$ .....	.....	1	.....	1
3 $\frac{3}{8}$ .....	.....	1	.....	1
3 $\frac{3}{8}$ .....	.....	1	.....	1
3 $\frac{3}{8}$ .....	1	3	.....	4
3 $\frac{3}{8}$ .....	1	.....	.....	1
3 $\frac{3}{8}$ .....	1	.....	1	1
4.....	.....	1	.....	1
4 $\frac{1}{8}$ .....	1	.....	.....	1
4 $\frac{1}{8}$ .....	2	3	.....	5
4 $\frac{1}{8}$ .....	2	.....	.....	2
4 $\frac{1}{8}$ .....	1	1	.....	2
4 $\frac{1}{8}$ .....	.....	1	.....	1
4 $\frac{1}{8}$ .....	1	.....	.....	1
4 $\frac{1}{8}$ .....	10	14	1	25

CHEDABUCTO BAY

3 $\frac{3}{8}$ .....	.....	1	.....	1
3 $\frac{3}{8}$ .....	1	.....	2	3
3 $\frac{3}{8}$ .....	1	.....	.....	1
4.....	.....	1	.....	1
4 $\frac{1}{8}$ .....	1	.....	.....	1
5 $\frac{1}{8}$ .....	.....	.....	1	1
5 $\frac{1}{8}$ .....	.....	1	.....	1
5 $\frac{1}{8}$ .....	3	3	3	9

EXAMINATION OF OYSTER BEDS

Neither at Upper Caraquet bay nor at Baie du Vin, where the examinations were made, were the beds found to be in good shape.

In the former the oysters exist at the western end of the bay in an area of about one and a quarter miles by one mile, and are more numerous on the Maisonette side than they are on the Upper Caraquet side. The bay is supplied with fresh water by two rivers, known as the north and south rivers, and the south river is a more considerable body of water than the north river.

Great masses of debris, composed of dead oyster and dead mussel shells, sometimes mingled with dead eel-grass and mud, were brought up by the rakes, and the hand had often to be passed through that material in order to find the living oysters.

This spot of the Baie Chaleur, however, has according to its size doubtless been in the past a good oyster resort with a good quality oyster.

The oysters are now of small size, the great majority of those obtained were under three inches in length, and it may be that the oysters of this place have never been of any considerable size.

The following tabulation of the measurements of 103 oysters obtained in Upper Caraquet bay presents a comparison of the numbers of those under 3 inches with those of 3 inches and over.



Inches	Oysters	Inches	Oysters
1 $\frac{3}{8}$ .....	1	3.....	6
1 $\frac{1}{2}$ .....	2	3 $\frac{1}{8}$ .....	2
1 $\frac{3}{4}$ .....	1	3 $\frac{1}{4}$ .....	6
1 $\frac{7}{8}$ .....	4	3 $\frac{3}{8}$ .....	4
2.....	4	3 $\frac{1}{2}$ .....	3
2 $\frac{1}{8}$ .....	6	3 $\frac{3}{4}$ .....	3
2 $\frac{1}{4}$ .....	11	3 $\frac{7}{8}$ .....	1
2 $\frac{3}{8}$ .....	7	4.....	1
2 $\frac{1}{2}$ .....	11	4 $\frac{1}{8}$ .....	1
2 $\frac{3}{4}$ .....	7	4 $\frac{1}{4}$ .....	2
2 $\frac{7}{8}$ .....	9	5.....	2
3.....	8	5 $\frac{1}{4}$ .....	1
Under 3 inches.....	71	3 inches and over.....	32

As regards the physical nature of the sea-bed, or what by nature pertained to it, there is the following to be stated:—

The bed was almost entirely composed of a mixture of sand and mud, with hardly such a thing as a stone, and there was an unlimited supply of food, as diatoms of various kinds were found in sediment from oyster and mussel shells, in the water in the pail, and in the digestive gland of the oyster.

Besides dead oyster and dead mussel shells, in spots there were living mussels that outnumbered the living oysters, to the detriment of the latter. Sometimes the oysters were rather laden with mussels, and on one of the larger oysters nine good-sized mussels were attached. But there were few attachments of other living objects on the oysters. A few specimens, alive or dead, of slipper shells (*Crepidula*) of the two species indigenous to Maritime waters were found.

Towards the north side of the bay numerous medusoids (jelly-fishes) were floating through the water, but unless such might be harmful to the floating oyster spat they could not be injurious to the oyster; and in general free moving forms on the sea-bed were so scarce as to be hardly worthy of mention, and no star-fishes were found.

The examination of the Upper Caraquet bay oyster bed was made on and between the dates of July 6 and 12. The spawning time was not then on, but it seemed apparent it was about to be.

The examination of oyster beds of Baie du Vin was made on the 9th of November.

The purpose of the visit was chiefly to examine the sizes of the oysters, which on certain beds were said to be very small. Those reputed beds were three in number, viz: Oyster point, Egg island, and Blue Rock beds. The distances between them were estimated approximately to be 1 $\frac{1}{2}$  miles between the first mentioned and the second, 2 miles between the second and third, and 3 $\frac{1}{2}$  miles between the first and third.

The examination of specimens was made when out with the local overseer in his boat, his guardian being also on board, when a sufficient number were obtained for the purpose required, besides which, the oyster fishing season being then open, specimens were also examined when among the fishing boats which were crowded in their operations on or bordering the Blue Rock bed, which was one of the beds where the oysters were alleged to be so small.

A representation had been made that, as the oysters on those beds did not exceed 2 $\frac{1}{2}$  or 2 $\frac{3}{4}$  inches in size, unless fishermen were permitted to take oysters of smaller size than the present regulation covers they could not make the fishing profitable.

In itself, however, the claim as to the undersize of the oysters on those beds was not strictly correct, as besides undersized ones, specimens of 3 inches or over were obtained, as the following tabulation will show:—

Under 3 inches		3 inches and over	
1 $\frac{1}{2}$ .....	1	3.....	2
1 $\frac{3}{4}$ .....	1	3 $\frac{1}{4}$ .....	2
2.....	2	3 $\frac{1}{2}$ .....	1
2 $\frac{1}{4}$ .....	3	3 $\frac{3}{4}$ .....	1
2 $\frac{1}{2}$ .....	2	3 $\frac{3}{4}$ .....	2
2 $\frac{3}{4}$ .....	5	3 $\frac{3}{4}$ .....	1
2 $\frac{3}{4}$ had been seen is, it cannot be long, under the present condition, before all three beds will be depleted of oysters of three inches or over in size.	2	3 $\frac{3}{4}$ .....	1
2 $\frac{3}{4}$ .....	2	3 $\frac{3}{4}$ .....	1
2 $\frac{3}{4}$ .....	1	4.....	1
2 $\frac{3}{4}$ .....	2	4 $\frac{1}{4}$ .....	2
	19		13

Measurements according to the beds were: Oyster point, 11 below legal size and 2 above 3 inches; Egg island, 4 below legal size and 5, 3 inches or over; and Blue rock, 4 below legal size and 6, 3 inches or over.

But everything considered, and allowing for what has been shown about there being oysters of larger size than represented, the beds, especially Oyster Point bed, were in poor shape. No wonder that there are not enough oysters within the present regulation size to make the fishing profitable, for there could be little chance, with such a crowd of boats operating on the beds, for many of the undersized or coming up oysters to exceed the minimum regulation size.

As a matter of fact it was hard work to get fishermen to distinctively show where the location of the Blue Rock bed was, as a spot apart from the entire area over which the boats were operating, and all that can be said from what had been seen is, it cannot be long, under the present condition, before all three beds will be depleted of oysters of three inches or over in size.

That is the condition of the Oyster point bed now, and the percentage of oysters measured from that bed was about 84 $\frac{2}{3}$  under regulation size and about 15 $\frac{1}{3}$  over three inches.

During the time of the shell-fish investigations two demonstrated addresses were delivered to the fishermen and fishery officers. One was a talk on the oyster in the schoolhouse at Upper Caraquet, and the other a talk on the scallop and lobster at Alberton. As opportunity was afforded I had also conversations concerning shell-fish with fishermen personally or in groups.

In the course of the fiscal year various questions bearing on the natural history of marine or other aquatic organisms were referred to me, and a collection of fishes from the arctics made by Mr. J. D. Soper, was by request of the Victoria Memorial Museum examined by me, and an account of the same, entitled: "Notes on a collection of Arctic Fishes," the result of the examination, was sent to the museum, a copy of which is on file.

## APPENDIX No. 4

## REPORT OF C. BRUCE, A.M.E.I.C., FISHERIES ENGINEER

Work in this branch included that under the headings,—

- (a) Clearing Rivers and Building Fishways.
- (b) Fish Culture.
- (c) Biological Stations.
- (d) General.

Under the heading "Clearing Rivers and Building Fishways" the following works were performed:—

## NOVA SCOTIA

*Salmon River, Yarmouth County.*—Owing to representations that fishways should be installed in several dams on this river, a general inspection was made. The first two dams from the mouth of the river are opened up to the passage of fish by about the first of April allowing both salmon and alewives to ascend as far as Hooper lake. Evidence was obtained that no good purpose would be served in opening the river above this point as it is small and sluggish and, moreover, the bottom is in many places full of old decayed sawdust to considerable depth.

*Eel River, Yarmouth County.*—Inspection was made relative to the necessity for having a guardian on duty during the time alewives are running.

*Barrington River, Shelburne County.*—Inspections of the fishways in the Woollen Mill and Electric Light dams made. Owing to representations that salmon were ascending the tailrace channels from both of these dams, providing thereby favourable poaching conditions, arrangements were made to have these channels screened during the period when salmon are ascending. Arrangements were also made for some slight improvement to the fishway in the Electric Light dam.

*Jordan River, Shelburne County.*—The fishway in the dam at the mouth of the river was rebuilt, the type of construction being changed to improve it. A wing dam was also built to confine the water around the foot of the fishway and a channel opened from this to the centre of the river.

The fishway in the second dam was altered so that the lower entrance would be submerged during low water.

The cost of work above outlined was \$643.27.

*Green Harbour River, Shelburne County.*—During the last several years a fair run of salmon has been entering this river, possibly due to the facts that the Jordan river, not far distant, was blocked and that the development of electric power has stabilized the flow to a greater extent than was the case formerly. An inspection of the river was made to determine the necessity for deepening shallow portions to make them more readily accessible for salmon. Owing to abnormally high water during the early fall it was impossible to carry out the works contemplated.

*Mersey River, Liverpool County.*—The fishways built in the five dams on this river in 1923, have proved eminently satisfactory. The first return of salmon in any appreciable numbers was noted in 1926, and during the season



of 1927, angling was good with large catches. Some small repairs were made to the concrete wing walls of the fishways where frost had broken off pieces during the previous winter. Owing to the liability of debris collecting and blocking the upper entrances of the first two fishways heavy log booms were provided. The expenditure entailed was \$193.67.

An inspection was made of the storage dam at Indian Gardens at the foot of lake Rossignol and plans prepared for a fishway therein, but owing to later information that the Nova Scotia Power Commission would likely proceed with extensive power developments during the season of 1928, no action to require this fishway was taken.

*Petite Riviere, Lunenburg County.*—A general inspection was made of the fishways on this river and arrangements made for improving conditions at the Conquerall Mills dam, enlarging one of the pools in the fishway and opening up a channel in the river bed below to give salmon a better opportunity of ascending during low water. An expenditure of \$100 was involved in this work.

*La Have River, Lunenburg County.*—An inspection of the fishway built by Messrs. Hollingsworth and Whitney in the second dam on this river was made and directions given regarding some modifications which were necessary on account of errors in construction.

Following an inspection of De Long's dam on the North Branch of the La Have river, directions were given the owner regarding the construction of a run-round fishway to replace an old wooden fishway which was in such a poor state of repair as to be ineffective.

*Lequille River, Annapolis County.*—An inspection was made of the fishway in the hydro-electric power dam owned by the town of Annapolis on this river, and the mayor was interviewed regarding the repair of the concrete walls and floor which were broken down in some places.

*Annapolis River, Annapolis County.*—The fishway in the hydro-electric power dam at Lawrencetown was inspected and conditions found to be normal.

*Nictaux River, Annapolis County.*—An inspection was made of the work done the previous year at Nictaux Falls, which included several concrete wing dams. Conditions were found to be much improved and a passage for salmon over the falls is now considered to be assured at practically all stages of water. The question of improving the fishway in the hydro-electric power dam at the head of the falls was looked into, but no decision to do any work was reached, as salmon have got past the dam with very little difficulty.

An inspection was made of the Charles Rogers dam on this river, and as a result of investigation it was decided that a new concrete fishway should be built. Surveys were made from which designs will be made with a view to having the fishway built in the summer of 1928.

*Cornwallis River, Kings County.*—Plans for a fishway having been previously served on Mr. J. W. Cook, owner of a small dam on this river, a further inspection was made to arrange for details regarding which Mr. Cook was desirous of having further information.

*Gaspereaux River, Kings County.*—Owing to increased fluctuation in the head of water at the hydro-electric power dam on this river at White rock, arrangements were made to effect some slight modifications to the upper entrance of the fishway to reduce the velocity of water.

*Herbert River, Hants County.*—An inspection and survey were made for the construction of a fishway in a small dam recently built by Mr. Ira S. Crowe. Plans for the fishway were subsequently prepared.

*Meander River, Hants County.*—An inspection was made of an old dam on this river which had recently been closed for log driving purposes. In an interview with the owner it was agreed that he would provide an opening through the dam to permit the passage of salmon during the period of the run, in lieu of building a fishway.

*Osier River, Halifax County.*—An inspection of the fishway built during the spring in Boutillier's dam was made.

*Nine Mile River, Halifax County.*—At the request of Messrs. Geo. Fraser & Sons, Timberlea, that plans for a fishway in their dam on this river be supplied, a survey was made and the plans subsequently sent to them.

A small obstruction to the passage of salmon was removed at a cost of \$5.

*Ingram River, Halifax County.*—An inspection was made of the fishway in Messrs. Miller Brothers' dam. Conditions were found to be unsatisfactory, the dam being in such a leaky condition that it would not retain a head of water sufficient to supply a fishway. An arrangement was made with the owners to undertake certain repairs to the fishway.

*Ship Harbour River, Halifax County.*—An inspection and survey were made for a fishway in the dam at the foot of Ship Harbour lake and plans were subsequently furnished to the owners of the dam. This fishway is to replace one that was not wholly effective.

*Tangier River, Halifax County.*—An inspection of the fishway near the mouth of the river was made and slight repairs arranged which were carried out by the overseer at a cost of \$3.38.

*East River Sheet Harbour, Halifax County.*—An inspection of the fishway built by the Nova Scotia Power Commission in their intake dam at Ruth Falls hydro-electric power development was made and the Commission notified regarding some slight modifications which were considered desirable to make it more effective.

In Cape Breton Island a number of the smaller streams require some attention every year. Owing to the hilly nature of the country and consequent heavy run-off during freshets they frequently become obstructed with old logs, uprooted trees and debris which in many cases form a complete barrier to the ascent of trout and salmon. Obstructions of this nature are removed by day labour under the supervision of the fishery overseer. The following is a list of the streams from which obstructions were removed with the cost:—

Southwest brook, Cape Breton county.....	\$249 25
Northwest brook, Cape Breton county.....	50 00
Ferguson's brook, Cape Breton county.....	49 50
Nicholson's brook, Cape Breton county.....	44 95
Benacadie river, Cape Breton county.....	48 95
Big brook, Inverness county.....	20 00
Murray's brook, Richmond county.....	269 95

#### NEW BRUNSWICK

*Mispec River, St. John County.*—There has been for a number of years a stone dam at the mouth of this river, upwards of fifty feet in height. The question of providing a fishway for salmon has been considered on a number of occasions previously, but owing to the heavy cost of construction and doubt as to the efficiency of any structure which might be built, no action was taken.

Last year a large gate through the dam, at a height about six feet above the bottom, was blown out by persons interested in providing a passage for salmon. Following this it was observed that salmon were attempting to ascend by jumping at the gate opening, but were unable to do so.

Surveys were made for the provision of a fishway which would enable their ascent.

*Hammond River, St. John County.*—An inspection was made of a dam on this river which, it was alleged, prevented the ascent of salmon. The dam, which was originally built for log-driving purposes was unused and the gates were open. As the ascent through the gate openings only involved a jump of about two feet, it was not considered that any action to improve conditions was necessary. Later investigation confirmed this view, information being obtained that salmon were seen above the dam.

*Skiff Lake, York County.*—An examination and survey were made at the outlet of this lake for data in connection with the provision of screens to prevent the descent of land-locked salmon into the outlet stream, from which, it was alleged they were unable to return.

*Aroostook River, Victoria County.*—The Aroostook river, a tributary of the St. John river, is practically all in the state of Maine. The Aroostook Power Company has a large hydro-electric dam on the river a short distance above the confluence. While the Canadian Government has not been interested in the river, owing to the fact that any salmon ascending would be for the benefit of the state of Maine, the Government of that state has urged that provision be made for the ascent of salmon. At the request of the Commissioner of Inland Game and Fisheries for Maine, an inspection of the dam was made in company with officials of his department. As a result of the conference following the inspection, it was agreed that the State Department would undertake to provide a fishway and make all the necessary arrangements with the Power Company relating thereto.

#### MANITOBA

Following an inspection of several rivers, in previous years, designs for fishways in several dams were prepared and furnished to the owners of the dams for execution of the work.

During the current year, fishways were built in the following locations by the companies indicated:—

- Whitemud river, at Gladstone, Canadian Pacific Railway.
- Whitemud river, at Westbourne, Canadian Pacific Railway.
- Ochre river, at Ochre, Canadian National Railway.
- Vermilion river, at Dauphin, Canadian National Railway.
- Pipestone creek, at Bellview, Canadian National Railway.

#### SASKATCHEWAN

Designs were furnished and fishways built during the current year as follows:—

- Qu'Appelle river, at Craven, Department of Public Works.
- Gravelbourg, Canadian National Railway.

#### ALBERTA

Designs were furnished and fishway built during the current year by the Canadian Pacific Railway in their dam on the Vermilion river.

#### BRITISH COLUMBIA

*Marble Creek, Vancouver Island.*—An obstruction consisted of an accumulation of debris, logs, roots and stumps extending for a distance of one hundred and fifty feet in the stream bed and piled twenty feet high within the canyon walls. All material above water level was cut and blasted into small pieces which, it was expected, would float to sea in freshet. Subsequently it was reported that certain submerged logs which could not be dealt with at the time, had come to the surface and in their course down the stream had lodged in



a narrow stretch of river holding up a portion of the cut material as well as all drift being carried down by the stream. The removal of this new jam is being attended to so as to ensure the permanence of the main work. The removal of this obstruction was under the supervision of the engineers, the cost being \$1,676.55.

A number of smaller obstructions were removed from streams under the direct supervision of the overseer or guardian, in each instance, as follows:—

Owen creek.....	at a cost of \$	25 35
Capilano river.....	" "	4 00
Two Mile creek.....	" "	12 47
Oke-over arm.....	" "	12 00
Koeye river.....	" "	25 87
Goldstream.....	" "	96 40
Owes-Sit-Sa creek.....	" "	22 00
Nicomeki river.....	" "	53 40
Serpentine river.....	" "	28 75
Wakefield river.....	" "	20 00
Fishermans river.....	" "	140 00
Ruby, Bear and Lee creeks.....	" "	100 00
Village Bay creek.....	" "	11 12
Isolem river.....	" "	27 80
Eastern creek.....	" "	35 55
Black creek.....	" "	15 90
Sauch-en-Auch creek.....	" "	47 36
Bust creek.....	" "	7 00
103rd creek.....	" "	6 85
Kaprino river.....	" "	28 00
Johnson river.....	" "	29 75
Nimpkish creek.....	" "	19 20
Fish lake.....	" "	35 50
Shuswap falls.....	" "	8 10

*Stamp River, Vancouver Island.*—A fishway was built over Stamp falls, under the direct supervision of the engineering staff, at a cost of \$7,015.58. The work involved the excavation of 648 cubic yards of solid rock and the placing of 91 cubic yards of concrete. Owing to unusually high water, the execution of the work was a matter of considerable difficulty and completion was retarded until the latter end of September, when the main body of the sockeye run was over. Those salmon arriving after completion of the work passed up through the fishway without difficulty. This fishway will be the means of relieving the situation at this point which, in the past, has made necessary the passing of fish over the falls by hand.

*Fraser River, Bridge River Falls.*—A fishway was excavated entirely in solid rock, under the direction of the engineering staff, at a cost of \$643.17. Owing to the great range of water in the canyons and narrow places on the Fraser river, such fishways are useful only during the particular stages of the river for which they are intended. This fishway was built to operate at the lowest stages of flow which was only recorded for a very short period of time during last season. The conditions for this stage of water have been greatly improved by the fishway.

*Nicola Lake.*—A fishway thirty-six feet long and six feet wide was incorporated in the dam constructed during the year at the foot of Nicola lake, near the town of Nicola, B.C., permitting salmon to pass without difficulty.

*Hell's Gate, Fraser River.*—Owing to the fact that salmon are unable, at certain stages of water, to negotiate the rapids at Hell's Gate, a board of Engineers comprising representatives from the Department of Public Works, the Water Power and Reclamation Service, the provincial Department of Fisheries, and the federal Department of Fisheries, was formed, to carry out investigations looking to the necessity and possible means of improving conditions at this point.

Complete surveys of the canyon at Hell's Gate were conducted, cable stations established for measuring velocities and gauges set both above and

below the gate, from which studies of all conditions affecting velocities, turbulence, etc., were made. The cost of these investigations, which are still in progress was \$2,166.55, and considerable time of the engineering staff was devoted to them.

*Baker River Fishway.*—This project which involves an elevator designed to take salmon over a dam about two hundred and sixty-five feet high, located on Baker river, in the state of Washington, was carefully examined and such data as was available secured.

*Buckley River (Hagwelgat Canyon).*—An inspection was made and report prepared on the possibility of damage to the river by the construction of new bridge abutments.

*Puntledge River.*—Inspection was made of obstructions and directions given regarding the reconstruction of the fishway in the impounding dam of the Canadian Collieries (Dunsmuir).

*Prospect Lake.*—An inspection of the fishway was made.

Under the heading "Fish Culture," the following works were performed:—

#### NOVA SCOTIA

*Yarmouth Hatchery.*—A careful examination was made of a number of streams in Yarmouth county for the purpose of selecting a site for a salmon and trout hatchery establishment, involving surveys to obtain levels and volumes of discharge. The site finally approved by the department at the outlet lake George was surveyed for the necessary property and water rights.

*Antigonish Hatchery.*—Complete surveys of a site for a salmon and trout hatchery establishment were made at Fraser's Mills on the South river, this site having been approved by the department after a number of others had been eliminated.

*Windsor Hatchery.*—Owing to the pollution of the stream from which the water supply for the Windsor Hatchery is obtained by large gypsum mining operations, it was necessary to give consideration to the selection of a new site. Several streams were examined and preliminary surveys conducted to determine their suitability for hatchery purposes.

#### NEW BRUNSWICK

*Florenceville Hatchery.*—Plans and specifications were prepared and contract let and completed for the construction of a salmon and trout hatchery establishment at White Marsh creek, near Florenceville, N.B. The work under this contract included the main building eighty-nine feet ten inches long, and twenty-three feet wide, and a combination garage and ice house thirty-two feet long by eighteen feet wide.

The main building contains a six-room dwelling house for the superintendent at one end and two rooms for the assistant with an office over at the other. The hatching room proper is fifty-three feet long, one storey, with side and roof lighting. The equipment includes thirty hatching troughs, standard design, sixteen feet long. Floors of the hatchery are of concrete throughout and in designing it a new feature was introduced, consisting of twelve floor tanks each twelve feet long, two feet two inches wide, and one foot deep, two tanks being placed under each cluster of hatching troughs. The tanks are supplied independently with water from the overflow of the hatching troughs and are designed primarily as a means of relieving congestion during the hatching period.



The dwelling is heated with hot air furnace, and equipped with sanitary plumbing, the water supply for which is obtained from a well by an automatic electric pumping equipment, and the waste from which is discharged into a septic tank. All buildings throughout are lighted by electricity.

The garage building contains accommodation for two cars or trucks, an ice room with cold chamber for keeping feed for rearing of fry, and storage room overhead.

The water supply for the establishment is obtained from the reservoir formed by building an earth embankment dam with concrete core-wall, discharge gates and inlet gates, the dam being about one hundred and fifty feet long and twelve feet high at the gates. Water is conducted to the hatchery by a six inch wire wound wood stave pipe and to the rearing pond system by a similar pipe ten inches in diameter.

The rearing pond system consists of eight ponds each one hundred and twenty-six feet long, five feet wide and four feet deep, constructed with concrete side walls and gravel bottoms, each pond being fed independently from the water supply. On account of the lateness of the season, only five of these ponds were completed, but excavations for the balance were removed and the whole left in readiness for completion next year.

The construction of the dam and rearing ponds was done by day labour, under the direct supervision of the Engineers.

*St. John Hatchery.*—The rearing and brooding facilities at this hatchery were extended by the construction of fourteen ponds, of varying lengths to suit the ground location, the total length being twenty-one hundred and twenty-eight feet. Ponds are all four feet wide with side walls of concrete and bottoms of gravel. The water supply is obtained from Little river reservoir, a new eight-inch wood stave pipe being installed and from a large spring from which an eight-inch pipe was also laid. Both sources of water supply are led into a concrete tank where they may be mixed as desired thus regulating to a certain extent, the temperature of the water before it enters the head trough of the pond system. The ponds are arranged so that each may be supplied separately from the head trough or the water may, if desired, be circulated through two, three, or more from one supply.

The entire pond system was enclosed in a link chain wire fence three feet high with a twelve-inch band of smooth galvanized iron around the top to prevent the entrance of mink.

Electricity having become available during the year, the buildings, including dwelling, hatchery and garage, were wired and equipped with lighting fixtures. Several lights were also established around the pond system controlled by switches from the dwelling, as a protection against possible poaching.

The hot air furnace in the dwelling was repaired and one new register with heating pipe installed.

*Restigouche Hatchery.*—Extensive repairs were made to the establishment including the renewal of one half the floor in the hatchery, shingling the north slope of the roof, repairing foundations, and installing a sanitary closet combination in the superintendent's quarters. The roofs of several outbuildings were reshingled and repairs made to the water supply to the hatchery.

#### ALBERTA

*Lesser Slave Lake Hatchery, Alberta.*—An inspection, covering the entire length of the lake, was made for the selection of a site for a whitefish hatchery in Lesser Slave lake. The location finally decided upon as being most suitable is at Canyon creek on the south side of the lake, about eighteen miles from the lower end. The lake is quite shallow around the shores and is, moreover,



subject to extremely heavy ice floes during the break up in the spring. In the selection of the site, it was necessary to find a location that provided fairly deep water at a reasonable distance from the shore, in order that a water supply could be obtained. Protection against the heavy run of ice was also necessary to insure reasonable safety for the intake pipe.

A contract was awarded for the construction of the hatchery in the fall of the year. The main building is seventy-six feet long and forty feet wide, fitted with eight hundred and eighty-eight hatching jars providing capacity for one hundred and thirty million whitefish eggs.

The ground floor is laid out for the hatching room and engine room and the upper floor is entirely taken up with living quarters which comprise a six room apartment for the superintendent and seven rooms for the accommodation of the staff.

Plans and specifications were prepared for a wharf four hundred feet long which was necessary to provide harbour for the hatchery boats and protection for the intake pipe.

The work in connection with this establishment will not be completed until next autumn.

*Waterton Lakes Park Hatchery, Alberta.*—An inspection covering a number of streams in southern Alberta was made for the selection of a site for a Trout hatchery. The location finally decided upon is in the Waterton Lakes National Park. A contract was awarded for the construction of a hatchery forty-four feet long by twenty-four feet wide and a one storey cottage for the superintendent, thirty-two feet six inches long and twenty-two feet six inches wide.

The hatchery is divided into two rooms, one thirty-one feet by twenty-three feet providing the hatching room and the other twenty-three feet by twelve feet being fitted as a garage for the hatchery truck.

The hatching room is fitted with fifteen standard hatching troughs sixteen feet long, and six concrete tanks in the floor, two under each cluster of hatching troughs, each two feet wide and fourteen feet long. Provision has been made so that in the event of operations becoming larger, the space occupied by the garage may be converted into additional hatching room. The water supply is obtained by gravity through an eight-inch wood stave pipe from Spring creek where a small concrete dam was built to provide a reservoir.

The dwelling is fitted with sanitary plumbing, the water supply for which is piped from Spring creek, the discharge being into a septic tank. A hot air furnace is provided for heating.

*Jasper Park Subhatchery, Alberta.*—A subsidiary hatchery was arranged in a long cabin nineteen feet long by fifteen feet wide, a building formerly used by one of the park guardians. Ten standard hatching troughs were installed with the other requisite equipment, providing a capacity for two hundred and fifty thousand Trout eggs.

#### BRITISH COLUMBIA

*Nelson Hatchery, B.C.*—Improved quarters for the troughs and equipment of this hatchery were obtained in the basement of the Armoury in Nelson, and the hatchery was moved into them.

*Summerland Hatchery, B.C.*—A concrete block building thirty feet long and sixteen and one-half feet wide was purchased from the municipality of Summerland for the establishment of a small hatchery on Okanagan lake, the water supply being from the overflow of springs used by the municipality for water services.

The building was refloored and fitted with a whitefish battery of fifty-two jars and with eight standard hatching troughs for trout, each fourteen feet long.

In the basement, under the main floor, a whitefish tank for fry, twenty feet long and four feet wide, and two tanks for trout fry, each twenty feet long by three feet wide, were installed. The building is lighted by electricity.

*Stuart Lake Hatchery, B.C.*—The entire foundation logs, and such of the wall logs as were rotted, were renewed with sound timber. The work was done under the supervision of the engineering staff with local labour.

*Francois Lake Hatchery, B.C.*—A survey was made by the engineering staff for purposes of estimate for a site and construction of a hatchery. A small log building was built on the Nadina river flowing into Francois lake, to provide shelter for egg-planting operations in that district.

*Lakelse Hatchery, B.C.*—A new boat-house and marine ways were constructed to house the new hatchery boat, which is considerably longer and heavier than the one it replaced.

Under the heading "Biological Stations", the following works were performed:—

*Marine Laboratory, Eastern Passage, Halifax County.*—Following the decision by the department to erect this station, the site was inspected and afterwards acquired. A number of conferences were held with Dr. A. G. Huntsman, Director of the Fisheries Experimental Station, after which plans and specifications for the laboratory were prepared. The building is seventy-five feet long and thirty-two feet six inches wide, with basement, one floor above and attic space for storage, supply-tanks, etc. Construction is concrete foundations and hollow tile walls faced with brick work. The basement has concrete floor and is subdivided into several rooms required for laboratories, work room and engine room.

The first floor is reinforced concrete construction supported on columns, and subdivided into the several laboratories, common room and office.

The building is equipped with sanitary plumbing, electric lighting and electrical outlets for laboratory purposes.

Under the heading "General" may be classed the inside work of the engineering staff, which included the preparations of numbers of plans for equipment, special maps relating to the fisheries and the preparation of reports and other office work.

The engineering staff supervised the establishment of anchorages for fishing boundary signs at Big Qualicum, Little Qualicum river and Oyster river, in British Columbia.

APPENDIX No. 5

FISHERIES

FINANCIAL STATEMENT, 1927-28

Vote No.	Service	Appropriation	Expenditure
		\$ cts.	\$ cts.
246	(Salaries and disbursements, fishery officers....\$ 428,520 33		
	(Fisheries Patrol Service..... 275,182 60		
	(Fisheries Protection Service..... 196,613 18		
		910,000 00	900,316 11
247	Building fishways, etc.....	20,000 00	14,319 06
248	Legal and incidental expenses.....	5,000 00	4,006 17
249 and 505	Conservation and development of deep sea fisheries.....	130,000 00	129,878 91
250	Fisheries Intelligence Bureau.....	1,000 00	561 57
251	Inspection of pickled fish.....	26,000 00	24,894 85
252	Fish culture.....	410,000 00	349,141 63
253 and 506	International Halibut Commission.....	28,500 00	31,652 54
254	Marine Biological Board.....	138,000 00	138,000 00
337	Compassionate allowance to widow of late F. Askew.....	2,000 00	2,000 00
		1,670,500 00	1,594,770 84
17 and 436	Civil Government salaries.....	107,220 00	93,617 81
17 and 436	Contingencies.....	28,500 00	27,795 77
Stat'y	Fishing bounty.....	160,000 00	158,375 80
		1,966,220 00	1,874,560 22
535	To provide for increases to Civil Service, both inside and outside.....		19,449 92
	Gratuities.....		350 00
	Superannuation Fund No. 5 (Act 1924).....		1 82
			1,894,361 96







## SUMMARY

Provinces	Inspectors and Overseers		Allowances			Gasoline and Oil	Special Guardians		Sundry	Total
	Salaries	Disb.	Auto	Boat	Horse		Wages	Expenses		
Nova Scotia.....	65,607 07	13,387 26	11,286 76	1,150 00	300 00	225 61	31,575 56	1,263 89	1,647 55	120,523 70
Prince Edward Island.....	10,817 76	2,624 42	1,200 00	112 50	.....	63 25	1,848 71	7 20	303 63	16,977 47
New Brunswick.....	36,725 65	6,388 92	4,809 68	1,391 13	75 00	1,226 19	31,776 08	763 50	990 10	84,147 15
Quebec.....	.....	53 25	.....	.....	.....	.....	.....	.....	91 59	144 84
Manitoba.....	9,585 00	4,212 02	.....	525 00	875 00	422 77	2,800 15	2,633 55	81 87	21,135 36
Saskatchewan.....	10,710 48	4,120 60	225 00	225 00	1,000 00	.....	1,098 75	2,137 10	76 79	19,593 72
Alberta.....	10,087 50	4,690 48	225 00	300 00	450 00	311 81	2,359 00	1,993 42	758 55	22,075 76
British Columbia.....	59,247 07	22,490 88	.....	.....	.....	.....	24,351 11	9,277 60	9,765 32	125,132 07
General Account.....	.....	.....	.....	.....	.....	.....	.....	.....	12,790 26	12,790 26
	203,680 53	57,967 83	17,756 44	3,703 63	2,700 00	2,319 63	95,810 26	18,076 35	26,505 66	428,520 33



## EXPENDITURE 1927-28—DETAILED STATEMENT OF FISHERIES PATROL SERVICE

Establishments and Accounts	Paylist	Board or Prov'n.		Fuel		Repairs		Supplies		Stewards		Clothing	Sundry		—		Total
		\$	cts.	\$	cts.	\$	cts.	Hull	Engine	Deck	\$		cts.	\$	cts.	\$	
<i>Nova Scotia—</i>																	
General account.....																	
"F.P. No. 1".....	2,343 03	24 90		363 02		232 96	198 81	120 89	127 09	54 23		8 82	10 00	10 00		3,501 48	
"McColl".....	3,730 71	2 60		602 20		73 49	250 48	480 99	85 95	169 94		29 61	27 73	168 54		5,594 51	
"Lula T." (chartered).....	478 06			68 03				87 13					1,431 61	1,431 61		2,064 83	
	6,551 80	27 50		1,033 25		306 45	449 29	689 01	213 04	224 17		38 43	1,637 88	1,637 88		11,170 82	
<i>New Brunswick—</i>																	
"Phalarope".....	4,015 00			911 53		421 64	61 59	236 24	26 41	26 59		8 82	30 96	30 96		5,738 78	
"Seal".....													560 00	560 00			
"Lloyd Geo. (chartered).....	645 00												182 00	182 00		827 00	
"Pontiac" (chartered).....	432 00	123 99		24 16									760 00	760 00		1,340 15	
"Shannon" (chartered).....	2,300 00			413 45									364 47	364 47		3,077 92	
	7,392 00	123 99		1,349 14		421 64	61 59	236 24	26 41	26 59		8 82	1,897 43	1,897 43		11,543 85	
<i>Prince Edward Island—</i>																	
"Richmond".....	1,092 70			169 81		12 00		126 28		7 00			60 54	60 54		1,468 33	
"Cock of North" (chartered).....	309 68												125 00	125 00		434 68	
"Dora" (chartered).....	600 00												250 00	250 00		850 00	
"Gander" (chartered).....	445 17												275 00	275 00		720 17	
"Leona" (chartered).....	464 52												275 00	275 00		739 52	
"Lucy" (chartered).....	900 00												550 00	550 00		1,450 00	
"Mary" (chartered).....	600 00												250 00	250 00		850 00	
"Olive" (chartered).....	709 68												296 20	296 20		1,005 88	
"White Star" (chartered).....	296 78												125 00	125 00		421 78	
	5,418 53			169 81		12 00		126 28		7 00			2,203 74	2,203 74		7,940 36	
<i>Manitoba—</i>																	
"Bradbury".....	7,219 16	2,297 66		4,019 57	Cr. 73 39	Cr. 33 98		1,039 58	510 19	212 76		297 95	133 61	133 61		15,623 11	
<i>British Columbia—</i>																	
General Account.....	2,861 21	68 59		55 88		311 95	9 45	104 17	9 00				39,040 79	39,040 79		42,468 26	
Poplar Island Whse.....	1,140 00			113 90		45 16	95 05	100 52	22 60	74 93		7 22	12 80	477 07		2,082 03	
<i>Departmental Boats District No. 1—</i>																	
"Elkhorn".....	3,420 00			550 10		61 49	7 80	5 91	5 50	18 75		15 00	28 29	28 29		4,112 84	
"Foam Crest".....	4,500 00			340 65		204 85	16 63	10 97	41 22	46 00		13 47	40 07	40 07		5,213 86	
"Humming Bird".....				2 00		33 25										35 25	
"Merry Sea".....	4,500 00	455 70		136 50		132 67	22 32	203 86	21 21	63 48		11 66	221 66	221 66		5,769 06	

"Salmo"	4,488 00	3 15	0 50	10 50	14 15	56 13	14 15
"Svan Tail"	3,420 00	305 00	37 41	108 14	7 87	9 31	5,354 27
"Vedder River"			1 00	53 13	15 02	7 64	3,802 91
							24,362 34
<i>District No. 2—</i>							
"Babine No. 1"	700 00	94 20	5 20	5 29	28 91		937 32
"Babine No. 2"	700 00	94 20		5 60	34 18		20 00
"Beldis"		39 00			20 00		204 42
"Bonila Rock"		845 45	121 25	378 08	202 75	21 82	3,990 36
"Cloyah"		636 06	32 50	400 99	329 11	64 50	4,120 02
				7 7			7 7
"Cohoe Bay"		203 97	24 75	279 35	92 54	14 85	2,002 00
"Hawk Eye"	1,201 94	624 83	46 90	368 88	75 01	118 91	38 34
"Heron Wing"	1,989 49	282 12	19 70	296 00	101 16	23 30	3,318 36
"Linnett N."	1,193 55	1,886 66	587 28	966 11	260 89	55 88	4 67
"Marfish"	5,438 66	1,426 78			151 89	118 89	1,985 49
"Merlin B"				262 86	0 71		11,287 41
"Metra"	4,593 26	670 73	73 75	412 93	279 78	102 29	263 57
"Nasago"		39 00			14 00		8,513 91
"Revidis"	2,732 14	281 45	104 45	371 77	284 84	68 30	204 43
							40 19
							42,423 82
<i>District No. 3—</i>							
"Black Raven"	1,290 32	439 30	42 22	516 82	367 14	47 87	108 31
"Jagret Plume"	1,375 00	297 40	223 81	344 92	65 02	15 16	2,950 28
"Gull Wing"	1,500 00	156 25	222 89	76 44	207 02	26 88	2,613 16
"Pursepa"	250 00	130 99			15 85		82 97
"Yanidis"	6,480 00	484 96	134 05	502 28	918 65	116 20	2,318 07
							202 89
							608 61
							185 93
							10,712 35
							19,197 47
<i>Chartered Boats—</i>							
<i>District No. 1—</i>							
"Iron Bark"		51 25			8 40		111 05
"Jean No. 2"	437 41	67 51			16 48		141 50
"Mury"	823 23	57 81			11 13		415 60
"Mineta"	300 00	79 69			15 09		93 00
"W.C.T."	1,100 00	44 43			6 48		547 78
							374 90
							1,532 38
							4,275 41
<i>District No. 2—</i>							
"Amy S"	787 50	314 82			76 15		927 00
"Argo"	346 19	56 96			13 28		429 00
"Bee"	387 17	34 04					845 43
"Dallas Ford"	414 29	161 24			16 96		412 00
"Doubie A"	1,023 39	234 34			17 55		833 21
"Ecobaa"	460 00	172 79			37 68		549 10
"Elida"	1,001 62	244 65			55 71		1,144 79
"Fisher"	751 00	119 51			30 53		549 10
"Flying Spur"	877 10	293 73			5 97		973 00
"Full Moon"	928 46	428 44			3 04		732 00
"Gruzzly"		9 12					1,088 00
"Irene R"	791 67	85 24			11 58		2,389 98
"Ironsides"							648 00
"Kiki"	939 92	148 42			29 16		1,555 01
							1,152 60
							2,410 29
							2,686 53
							9 12
							660 00
							1,548 49
							0 75
							1,280 00
							2,400 54

## EXPENDITURE 1927-28—DETAILED STATEMENT OF FISHERIES PATROL SERVICE—Concluded

Establishments and Accounts	Paylist	Board or Prov'n.	Fuel	Repairs		Supplies			Clothing	Sundry	—		Total
				Hull	Engine	Engine	Deck	Stewards			\$	cts.	
	\$	\$	\$	cts.	\$	\$	cts.	\$	\$	cts.	\$	cts.	\$
"Kitsault"	765 76		265 62					1 60		1,000 00	2,107 49		
"Lella"	495 97		174 13		74 51			1 52		612 00	1,333 99		
"Melrose"	638 71		67 97		26 20			3 04		523 50	1,259 42		
"Moose"	765 00		257 01		70 13			3 58		824 00	1,919 72		
"Myfawny"	420 24		109 02		39 44			1 52		600 00	1,170 22		
"Nereis"										350 00			
"Oh Boy"	787 50		256 86		79 45			5 04		1,070 00	2,198 85		
"Omar K"	667 74		76 34		33 00			3 04		1,329 12	1,549 00		
"Oswego"	918 88		87 72		16 46			3 78		1,000 00	2,025 52		
"Oyashimo"	1,132 26		161 80		16 81			3 78		1,078 00	2,392 65		
"Rose"	11 50									162 00	173 50		
"See Bee"	1,110 00		553 45		68 03			5 76		1,208 00	2,945 24		
"Sea Foam"	910 64		222 00		22 75			3 12		992 00	2,150 51		
"Seminole"	780 00		170 53		36 21			9 12		954 00	1,949 86		
"Sun Beam No. 2"	1,157 98		409 59		70 04	145 75		5 76		1,581 05	3,370 17		
"Velma"	667 74		116 66		15 57			3 04		549 00	1,352 01		
"Venture"	997 50		230 94		84 14			1 52		1,224 00	2,538 10		
"Wabash"	861 05		553 07		38 35					1,160 00	2,612 47		54,767 12
<i>District No. 8—</i>													
"Albo"	546 67		81 00		22 00			6 00		167 00	822 67		
"Ban Box"	496 67		89 70		29 00					153 00	768 37		
"Betty N"	493 33		69 35		5 15					152 00	719 83		
"C.H."	153 33		25 30		5 62					48 00	232 25		
"Charles"	146 67		29 04		1 85			0 24		45 00	222 80		
"Colby"	1,104 85		226 04		64 48			3 04		1,025 95	2,424 36		
"Crab"	153 33		12 65		3 12					47 50	216 00		
"Curlew"	264 52		88 47		21 41					80 00	454 40		
"Daisy"	496 67		91 70		31 90					186 00	805 27		
"Dana"	108 17		30 59		12 43			1 52		32 00	184 71		
"Deep Sea"	340 52		41 06		17 25					104 00	503 53		
"Dorothy N"	1,200 00		75 91		29 72					588 11	1,893 74		
"Dot"	1,200 00		257 45	1 60	62 50	3 00				316 50	1,841 11		
"Dunno"	433 87		82 45		6 50					184 40	707 22		
"Elsie"	267 85		13 60		2 85			3 20		82 00	366 30		
"Esperanza"	1,145 16		428 04		79 33					553 50	2,209 23		
"Esther K"	806 45		552 22		45 90			11 77	5 25	1,962 94	3,384 53		
"Ethel"			118 80		19 20					182 90	320 90		



## District No. 3—Cont.—

	264 52	33 50		6 95	0 70	81 00	386 67
"Fisher,"						81 00	386 67
"Georgia M,"	156 67	8 97		8 49		75 00	75 00
"Gipsy,"	283 87	29 27		13 97		48 50	222 63
"Haslam,"	230 00	62 60		16 59		175 00	502 09
"Iona,"	103 77	16 00		1 87		68 00	377 24
"Johnson,"	232 80	29 30		1 75		27 00	148 62
"Jones,"						71 00	335 45
"Kinekwa,"						45 00	42 00
"Lena,"	153 32	13 80		6 24		48 50	221 87
"Limit,"	124 62	9 80		2 08	0 46	38 60	175 65
"Lively,"	106 56	26 61		2 86		35 00	171 03
"Marfish,"	768 67	108 00		8 40	5 07	246 75	1 124 89
"Maud L,"	196 67	27 98		5 11		60 27	290 01
"M. E. Smith,"	1 231 29	199 50		17 75		815 50	2 464 04
"Northwind,"	203 33	13 40		5 80		62 00	284 52
"Olive,"	523 34	54 85		7 47		102 00	747 66
"Pilling,"	383 87	59 20		1 00		118 00	562 07
"Pontiac,"	1 200 00	128 25		10 50		371 00	1 718 75
"Reliance,"	1 580 81	55 13		32 52	4 61	1 526 00	3 199 07
"Rene,"	200 00	17 91		6 50		62 00	279 91
"Repentance,"	301 61	170 00				91 00	569 11
"Roberts,"	101 07	9 83		3 81	0 46	31 00	146 23
"Roona,"	9 68					36 00	45 68
"Sara S.,"	277 42	49 45		11 10		87 00	430 97
"Sayward No. 1,"	440 00	145 20		28 37	6 00	137 00	750 55
"S. & E.,"	361 83	9 75		5 00		159 80	576 38
"Sea Dog,"	1 000 00	18 40				276 00	1 294 40
"Sisters,"	200 00	19 32		4 68	3 04	62 00	289 04
"S.O.S.,"	101 51	5 52		6 10		30 00	143 13
"Speedwell,"	506 67	43 24		7 35		156 00	713 26
"Stubbs,"	493 33	63 00		17 25		154 00	737 58
"Susie M.,"	229 03	104 00		11 60		98 00	542 63
"Tango,"	277 42	47 84		14 20		86 00	425 46
"Three Flowers,"	156 67	42 55		11 47		48 50	259 19
"T.M.G.,"	658 06	52 32		4 30		204 50	919 19
"Wonder No. 2,"	156 67	42 55		15 53		48 50	263 25
"Wonder No. 3,"		9 20		1 76			10 96
	105 789 6	21 197 97	1 829 71	5 707 99	2 037 62	80 175 78	228 804 46

## SUMMARY

Nova Scotia.....	6,551 80	27 50	1,033 25	449 25	306 47	689 0	213 04	224 17	38 43	1,637 88	11,170 82
New Brunswick.....	7,330 00	123 99	1,349 14	61 58	421 64	236 24	26 41	26 59	8 82	1,897 43	11,543 85
Prince Edward Island.....	5,418 53		169 51		12 00	126 28		7 00		2,206 74	7,940 36
Manitoba.....	7,219 16	2,297 66	4,019 57	Cr.	33 98	1,039 58	510 15	212 76	297 95	133 61	15,623 11
British Columbia.....	105,789 62	4,359 28	21,197 97	1,829 71	6,292 46	5,707 99	1,006 87	2,097 62	447 16	80,175 78	228,904 46
	132,369 11	6,808 43	27,769 74	2,267 20	6,998 57	7,799 10	1,756 51	2,568 14	792 36	86,051 44	275,182 60

## EXPENDITURE 1927-28—DETAILED STATEMENT OF FISHERIES PROTECTION SERVICE

<i>General Account</i> .....										44 11	44 11
<i>East Coast—</i>											
Arleux.....	24,159 53	4,560 57	5,475 88	2,074 38	1,482 27	621 87	1,384 07	630 26	1,302 26	1,044 40	42,735 49
Arras.....	25,473 20	5,141 04	10,706 93	1,768 55	2,192 88	987 04	2,080 30	493 82	1,502 50	1,233 51	51,580 97
	49,632 73	9,702 10	16,182 81	3,842 93	3,675 13	1,609 46	3,464 37	1,124 11	2,804 76	2,277 91	94,316 46
<i>West Coast—</i>											
General Account.....										11 50	11 50
Givenchy.....	22,044 10	5,306 30	7,226 95	487 91	3,741 44	756 77	308 10	715 60	1,448 63	629 59	42,065 43
Malaspina.....	29,983 92	6,491 06	12,124 87	2,938 83	1,636 66	992 90	1,708 78	1,420 66	1,495 96	782 01	59,575 68
	52,028 02	11,797 36	19,351 82	3,426 74	5,378 10	1,749 67	2,016 94	2,136 26	2,944 57	1,423 10	102,252 61

## SUMMARY

<i>General Account</i> .....										44 11	44 11
<i>East Coast</i> .....	49,632 73	9,702 10	16,182 81	3,842 93	3,675 13	1,609 46	3,464 37	1,124 11	2,804 76	2,277 91	94,316 46
<i>West Coast</i> .....	52,028 02	11,797 36	19,351 82	3,426 74	5,378 10	1,749 67	2,016 94	2,136 26	2,944 57	1,423 10	102,252 61
	101,660 75	21,499 58	35,534 63	7,269 67	9,053 23	3,359 16	5,481 31	3,260 37	5,749 30	3,745 12	196,613 18

## FINANCIAL STATEMENT, 1927-28

## EXPENDITURE, 1927-28—DETAILED STATEMENT OF FISH CULTURE

Hatcheries	Salaries	Maintenance	Total of Hatchery	Total of Provinces
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia</i> .....				28,148 93
Halifax School.....		944 10	944 10	
Antigonish.....		25 60	25 60	
Bedford.....	2,390 45	4,323 54	6,713 99	
Lindloff.....		991 47	991 47	
Margaree.....	4,271 61	4,982 24	9,253 85	
Margaree Pond.....	192 00	1,454 18	1,646 18	
Middleton.....	1,440 00	5,141 21	6,581 21	
Windsor.....	1,500 00	92 53	1,592 53	
Yarmouth.....		400 00	400 00	
<i>Prince Edward Island</i> .....				5,085 20
Kellys Pond Hatchery.....	2,820 00	2,265 20	5,085 20	
<i>New Brunswick</i> .....				102,131 24
Florenceville.....		32,703 52	32,703 52	
Grand Falls.....	2,996 00	2,809 95	5,805 95	
Miramichi.....	3,120 00	3,519 92	6,639 92	
Miramichi Pond.....	90 58	2,604 16	2,694 74	
Nepisiquit.....	547 23	871 09	1,418 32	
New Mills Pond.....	852 68	2,918 73	3,771 41	
Restigouche.....	2,313 42	4,500 70	6,814 12	
Sparkle.....	523 51	133 55	657 06	
St. John Hatchery.....	2,820 00	28,579 23	31,399 23	
St. John Pond.....		9,933 36	9,933 36	
Tobique.....		293 61	293 61	
<i>Ontario</i> .....				25 38
Collingwood.....		25 38	25 38	
<i>Manitoba</i> .....				22,954 22
Dauphin River.....		1,689 01	1,689 01	
Dauphin River Spawn Camp.....		1,919 12	1,919 12	
Gull Harbour.....	1,680 00	5,555 54	7,235 54	
Winnipegosis.....	1,890 00	10,220 55	12,110 55	
<i>Saskatchewan</i> .....				7,792 50
Qu'Appelle.....	2,940 00	4,852 50	7,792 50	
<i>Alberta</i> .....				44,109 92
General Account.....		14 00	14 00	
Banff.....	3,120 00	3,748 70	6,868 70	
Cold Lake.....		1,225 84	1,225 84	
Jasper Park.....		1,115 68	1,115 68	
Lesser Slave Lake.....	241 50	24,619 09	24,860 59	
Spray Lakes.....		1,459 58	1,459 58	
Waterton Park Hatchery.....		8,565 53	8,565 53	
<i>British Columbia</i> .....				112,532 65
General.....	7,860 00	3,229 78	11,089 78	
Anderson.....	2,058 64	4,797 64	6,856 28	
Babine.....	2,164 86	5,017 75	7,182 61	
Cowichan.....	3,537 50	3,584 55	7,122 05	
Cranbrook Eyeing Station.....	468 21	717 55	1,185 76	
Cultus.....	1,039 98	3,779 07	4,819 05	
Gerrard.....	510 97	1,207 41	1,718 38	
Harrison.....	227 75	832 12	1,059 87	
Kennedy.....	2,230 15	4,760 66	6,990 81	
Lloyd's Creek Eyeing Station.....	815 64	1,120 52	1,936 16	
Nelson Eyeing Station.....	1,924 61	4,652 71	6,577 32	
Pemberton.....	5,017 25	7,968 70	12,985 95	
Pitt.....	1,200 00	4,797 05	5,997 05	
Rivers Inlet.....	2,731 70	9,985 52	12,717 22	
Skeena.....	3,479 36	12,150 22	15,629 58	
Stuart.....	1,454 19	5,064 31	6,518 50	
Summerland.....	185 81	1,960 47	2,146 28	
<i>General Account</i> .....	5,940 00	20,421 59	26,361 59	26,361 59
	78,595 60	270,546 03	.....	349,141 63



## MARINE AND FISHERIES

## SUMMARY

Hatcheries	Salaries	Mainten- ance	Total of Hatchery	Total of Provinces
Nova Scotia.....	9,794 06	18,354 87	28,148 93	
Prince Edward Island.....	2,820 00	2,265 20	5,085 20	
New Brunswick.....	13,263 42	88,867 82	102,131 24	
Ontario.....		25 38	25 38	
Manitoba.....	3,570 00	19,384 22	22,954 22	
Saskatchewan.....	2,940 00	4,852 50	7,792 50	
Alberta.....	3,361 50	40,748 42	44,109 92	
British Columbia.....	36,906 62	75,626 03	112,532 65	
General Account.....	5,940 00	20,421 59	26,361 59	
	78,595 60	270,546 03	.....	349,141 63

EXPENDITURE, 1927-28—DETAILED STATEMENT OF CONSERVATION AND  
DEVELOPMENT OF DEEP SEA FISHERIES

<i>Under Department—</i>		
General Account.....	\$	4,676 36
Destruction hair seals.....		22,088 87
Scallop investigation.....		122 06
Transportation of fish.....		18,685 79
Royal Commission.....		66,901 70
Salmon investigation.....		415 49
Marine Laboratory.....		3,896 32
		<u>\$ 116,786 59</u>
<i>Under Biological Board—</i>		
Demonstration building.....	\$	11,334 41
Herring investigation.....		628 03
Lobsters.....		958 41
Fraser River currents.....		171 47
		<u>13,092 32</u>
		<u>\$ 129,878 91</u>

## FISHERIES EXPENDITURE, 1927-28—SUMMARY BY PROVINCES

Appropriation	General		Nova Scotia		Prince Edward Island		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan		Alberta		British Columbia		Total	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Salaries and disbursements, fishery officers.....	12,790	26	126,523	70	16,977	47	84,147	15	144	84			21,135	36	19,593	72	22,075	76	125,132	07	428,520	33
Fisheries Patrol Service.....			11,170	82	7,940	36	11,543	85					15,623	11					228,904	46	275,182	60
Fisheries Protection Service.....	10,588	74	83,483	74		273	09												102,252	61	196,013	18
Fish culture.....	26,361	59	28,148	93	5,085	20	102,131	24			25	38	22,954	22	7,792	50	44,109	92	112,532	65	349,141	63
Building fishways, etc.....		3 42	2,105	57			3 60									0 21			12,206	26	14,319	06
Conservation and development of D.S.F.	71,578	06	45,243	94	696	15	2,596	79											9,763	97	129,878	91
Fisheries Intelligence Bureau.....	301	05			92	52	120	00													561	57
Inspection of pickled fish.....	51	55			1,215	72	2,028	01													24,894	85
International Halibut Commission.....	31,652	54	17,914	62					194	93											31,652	54
Legal and incidental expenses.....			261	80			842	79					244	60			360	00			4,006	17
Compassionate allowance to widow of P. Askey.....																						
Marine Biological Board.....	138,000	00	2,000	00																	2,000	00
Fishing Bounty.....			82,107	00	12,695	45	19,906	80	44,266	55											138,000	00
																					138,375	80
Totals.....	291,327	21	399,018	12	44,380	96	223,320	23	44,606	32	25	38	59,957	29	27,386	43	66,545	68	596,579	02	1,753,146	64
Civil Government salaries.....																					93,617	81
Contingencies.....																					27,795	77
Increases to Civil Service, inside and outside.....																					1,874,560	22
Gratuities.....																					19,449	92
Superannuation Act No. 5.....																					350	00
																					1	82
																					1,894,361	96

## APPENDIX No. 6

LIST OF UNITED STATES FISHING VESSELS WHICH ENTERED  
CANADIAN PORTS ON THE PACIFIC COAST DURING THE  
YEAR ENDED DECEMBER 31, 1927

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed  cwts.
A.L. 573.....	5	1	1	Shelter.....	
Akutan.....	46	9	9	Sell fish.....	3,260
Alaska.....	18	5	1	Bait and ice.....	
Alaska.....	57	10	5	Sell fish.....	1,400
Albatross.....	40	13	11	Bait, sell fish and ice.....	1,640
Active.....	8	3	1	Sell fish.....	
Acton.....	7	2	1	".....	400
Addington.....	26	6	6	"....., bait and ice.....	1,000
Agnes.....	17	5	1	Bait and ice.....	
Agnes R.....	6	2	1	Shelter.....	
Alf. E.....	9	4	1	Supplies.....	
Alice B.....	17	5	2	Bait and ice.....	
Alitak.....	14	5	7	Engine trouble, bait and ice.....	
Alken.....	7	3	1	Sell fish.....	60
Alki.....	7	3	10	".....	680
Aloha.....	19	6	12	"....., bait and ice, supplies.....	
Alten.....	43	10	7	".....	2,620
Altik.....	37	10	1	".....	440
America.....	25	11	10	Bait and ice.....	
Angeles.....	28	6	7	".....	
Anna B.....	5	1	1	Shelter.....	
Anna J.....	22	6	11	Sell fish.....	1,640
Antler.....	22	5	9	Land sick man, orders, bait and ice.....	
Arcade.....	14	4	9	Bait and ice.....	
Arctic.....	29	7	5	Sell fish.....	1,460
Areil.....	7	2	1	Shelter.....	
Argo.....	26	6	9	Sell fish, bait and ice, supplies.....	180
Arrow.....	40	9	8	".....	1,940
Atlantic.....	24	9	10	"....., orders.....	3,160
Atlas.....	31	7	9	".....	2,840
Attu.....	37	11	3	".....	540
Augusta.....	19	5	3	".....	360
Aurora.....	16	5	2	Bait and ice.....	
Bainbridge II.....	3	2	1	Shelter.....	
Baltic.....	20	5	3	Sell fish.....	420
Beaver.....	17	5	4	Bait and ice.....	
Beaver.....	5	2	1	Shelter.....	
Bell M. 894.....	4	1	1	".....	
Bertha.....	11	4	3	Bait and ice, shelter.....	
Bertha.....	4	2	1	Towing Canadian boat in distress.....	
Betty.....	15	5	4	Sell fish, fuel.....	220
Betty Jane.....	34	6	6	Bait and ice, fuel.....	
Bill.....	4	3	3	Shelter.....	
Birdie B.....	4	3	2	Supplies.....	
Blanco.....	25	6	3	Sell fish, fuel.....	260
Blanco.....	12	3	6	Bait and ice.....	
Bonanza.....	30	6	7	Sell fish.....	1,880
Boonvoll II.....	27	6	5	Bait and ice.....	
Bravo.....	14	3	3	Sell fish.....	360
Brisk.....	37	9	8	Bait and ice, sell fish.....	1,680
Brothers.....	13	5	5	Sell fish.....	620
Brunvall.....	28	4	1	".....	360
Bruvold.....	37	7	9	".....	2,180
Bunt Ina.....	4	2	1	Supplies.....	
California.....	20	5	12	Bait and ice, supplies, engine trouble, shelter.....	
Cape Blanco.....	24	6	1	Bait.....	
Caroline.....	3	2	1	Shelter.....	
Cascade.....	7	1	1	".....	
Cedric.....	19	6	5	Sell fish.....	1,080
Chancellor.....	14	5	10	Bait and ice, supplies, sell fish, fuel, etc.....	60
Chelsea.....	51	9	9	Sell fish.....	3,300



LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1927—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwts.
Chimera.....	9	3	6	Bait and ice, supplies.....	
Chum.....	6	3	3	Sell fish.....	180
Cohoe.....	7	2	1	Shelter.....	
Columbia.....	41	10	6	Sell fish.....	1,520
Commonwealth.....	60	10	6	Bait and ice, sell fish.....	1,620
Constitution.....	39	10	9	" " ".....	1,920
Corona.....	19	11	10	" " ".....	120
Curlew.....	18	5	10	" " ".....	
Daily.....	26	6	7	Sell fish.....	1,280
Dave.....	4	1	1	Shelter.....	
De.....	11	3	1	".....	
Decker J.....	16	5	1	Bait and ice, landed fish.....	22
Defence.....	20	5	4	Sell fish.....	450
Democrat.....	27	6	8	".....	1,620
Diana.....	22	6	7	Bait and ice, orders.....	
Discovery.....	10	4	11	" " sell fish.....	60
Dixie.....	7	2	1	Shelter.....	
Dora H.....	15	5	1	Bait and ice.....	
Dorothy.....	89	16	1	Sell fish.....	280
Dorothy M.....	6	2	2	Shelter.....	
Eagle.....	67	15	7	Sell fish.....	3,180
Eastern Point.....	4	2	15	".....	660
Echo 728 L.....	4	2	1	Shelter.....	
Eclipse.....	44	11	6	Bait and ice, sell fish.....	1,160
Eidsvold.....	15	5	3	" " orders and supplies.....	
Eldorado.....	47	11	6	Sell fish.....	1,600
Eleanora.....	16	5	3	Bait and ice and land fish.....	15
Electra.....	48	10	7	Sell fish.....	2,060
Elly.....	7	2	1	Shelter.....	
Emblem II.....	5	2	1	".....	
Eureka.....	11	4	16	Sell fish, fuel, etc.....	1,360
Evelyn.....	4	1	1	Assistance given "Hyada" with broken shaft.....	
Evolution.....	17	5	10	Bait and ice.....	
Exceed.....	8	1	1	Shelter.....	
Excel.....	27	3	2	".....	
Explorer.....	34	9	4	Sell fish.....	1,540
Fairway.....	19	5	2	".....	360
Flamingo.....	13	5	1	Fuel, etc.....	
Flattery.....	10	3	3	Sell fish.....	200
Flint.....	24	5	1	Bait.....	
Florence M. 1675.....	4	2	1	Shelter.....	
Foremost.....	66	10	8	Sell fish.....	3,380
Forerunner.....	4	2	1	Shelter.....	
Foreward.....	18	5	2	Sell fish.....	60
Forward.....	4	1	1	Shelter.....	
Frances W.....	6	2	1	".....	
Franklin.....	34	9	4	Sell fish.....	660
Freia.....	4	2	2	Shelter.....	
Fremont.....	10	5	7	Sell fish.....	580
557 G.A. 1.....	4	2	1	Shelter.....	
G. 88 A.....	4	2	2	".....	
Galveston.....	21	5	1	".....	
Glacier.....	13	4	3	Sell fish.....	460
Gladstone.....	23	6	6	".....	1,360
Gloria.....	17	5	9	" , fuel, bait and ice.....	100
Going.....	6	2	1	Shelter.....	
Grant.....	51	9	12	Sell fish.....	4,400
Gray.....	11	2	3	Shelter.....	
Grayling.....	16	5	5	Sell fish.....	1,060
Grenburg.....	4	2	1	Shelter.....	
Gretchen.....	8	3	8	Bait and ice.....	
Hallo.....	16	5	1	".....	
Hanna.....	11	5	3	Sell fish, fuel.....	100
Happy.....	12	4	2	".....	320
Harding.....	19	5	5	Bait and ice.....	
Harold 638 L.....	3	2	1	Applying for Canadian Registry.....	
Havana.....	41	10	6	Sell fish.....	2,280
Hazel H.....	24	5	11	".....	2,000
Helgeland.....	56	15	9	".....	2,640
Hi Gill.....	12	4	4	".....	380

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1927—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed cwt.
Hooter.....	4	2	1	Shelter.....	
Hunter No. 2.....	11	6	1	".....	
Hunter No. 4.....	11	6	1	".....	
Imperial.....	23	6	8	Sell fish.....	1,240
Inger.....	7	3	2	".....	160
Ionic.....	24	6	1	Bait and ice.....	
Irene.....	30	7	3	Sell fish, supplies.....	560
Ithona.....	20	6	7	".....	1,280
Ivanhoe.....	27	7	7	".....	1,460
Jack.....	13	4	3	".....	540
Jennie F. Decker.....	16	5	1	Bait.....	
Jill 537 G.....	4	2	3	Shelter.....	
Joseph George.....	6	2	1	".....	
J. P. Todd II.....	12	5	6	Sell fish.....	680
Jumbo.....	3	2	1	Shelter.....	
June.....	15	4	6	Sell fish.....	720
June II.....	8	2	1	Shelter.....	
K. 452.....	5	2	1	Applying for Canadian Registry.....	
K. 911.....	4	2	1	Engine trouble.....	
Kanaga.....	47	9	6	Sell fish.....	1,180
Kanatak.....	39	9	2	".....	300
Katalla.....	16	5	3	" fuel.....	120
Kattie M. 681.....	5	2	2	Shelter.....	
Kodiak.....	38	13	5	Shell fish, fuel.....	1,380
L. 205.....	3	1	1	Shelter.....	
L. 321.....	5	1	1	Applying for Canadian Registry.....	
L. 338.....	4	1	1	Engine trouble.....	
La Paloma.....	14	11	11	Bait and ice, engine trouble, orders..	
Larcjng.....	16	5	3	Sell fish.....	440
La Verne.....	5	2	1	Water.....	
Leviathan.....	29	6	8	Sell fish.....	1,680
Lebanon.....	14	5	6	Bait, ice.....	
Liberty.....	44	15	6	Sell fish, bait and ice.....	960
Liberty 806 M.....	3	2	1	Applying for Canadian Registry.....	
Lief II.....	21	3	2	Sell fish.....	280
Lituya.....	30	9	6	".....	1,480
Life.....	6	2	1	Shelter.....	
Lola.....	4	2	2	Sell fish.....	100
Louise.....	16	5	11	Bait and ice.....	
Lummen.....	10	3	4	Sell fish.....	440
M. 131.....	5	1	1	Applying for Canadian Registry.....	
290 M.....	3	1	1	Shelter.....	
633 M.....	5	1	1	Applying for Canadian Registry.....	
M. 1064.....	4	2	1	Shelter.....	
M. 1084.....	4	2	1	".....	
M. 1699 The Boys.....	4	2	1	".....	
M. 1874.....	4	3	1	".....	
Mabel.....	5	2	1	Bait.....	
Madeline J.....	25	5	8	Shelter, bait and ice.....	
Magna.....	4	2	1	".....	
Majestic.....	33	9	7	Sell fish, bait and ice.....	2,540
Mankato.....	8	3	2	Bait and ice, land fish.....	9
Mankaton.....	11	2	1	".....	
Marguerite.....	7	2	1	Shelter.....	
Mariner.....	21	5	6	Bait and ice.....	
Marmot.....	30	8	9	Sell fish.....	
Mary.....	16	8	15	Bait and ice.....	
Mary Fischer.....	8	2	1	Shelter.....	
Mary L.....	7	2	1	".....	
Mary R.....	7	2	1	".....	
Mars.....	9	4	6	" bait and ice.....	
McKinley.....	38	10	9	Sell fish, bait and ice.....	2,420
Merkur.....	8	2	1	Shelter.....	
Memories.....	8	2	1	".....	
Mermaid.....	4	1	1	Sell fish.....	
Mermoid.....	19	5	8	Bait, ice, supplies.....	
Middleton.....	24	6	4	Sell fish.....	900
Mildred.....	19	5	1	Bait and ice.....	
Mildred II.....	31	7	2	Sell fish.....	320
Milkof.....	42	11	1	Bait and ice.....	
Miro S.H. 48 A.....	4	2	1	Shelter.....	

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1927—*Continued*

Name of Vessel	Tonnage	Number of men in crew	Tumber of times entered	Reasons for entry	Quantity of fish landed
					cwts.
Mitkoff.....	46	10	8	Sell fish.....	2,080
Munnie 284 T.....	5	2	1	Orders.....	
Muria.....	27	6	8	Sell fish.....	1,420
Myrtle.....	9	3	7	Bait and ice.....	
Naima.....	4	2	1	Shelter.....	
National.....	20	5	10	Sell fish, bait and ice.....	580
Nebraska.....	5	4	1	Shelter.....	
Neptune.....	43	13	11	Sell fish, bait and ice.....	1,680
New England.....	70	25	2	" " ".....	400
Nomad.....	15	4	1	Bait and ice.....	
Nordic.....	30	9	4	Sell fish, fuel.....	980
Norland.....	19	6	2	" " ".....	380
Norma.....	6	2	2	" " ".....	80
North.....	9	3	9	Bait and ice.....	
North.....	35	9	8	Sell fish.....	2,880
Northern.....	38	9	5	" " ".....	1,340
Oceanus.....	26	6	8	Shelter, bait and ice.....	
O.K.....	3	2	1	" " ".....	
O.K. K959.....	4	2	1	" " ".....	
Omaney.....	34	10	4	Sell fish.....	1,040
Omah.....	18	5	16	" " ".....	1,900
Orient.....	48	13	10	Bait and ice, orders, supplies.....	
Pacific.....	44	10	6	Sell fish, orders.....	1,900
Panama.....	35	13	10	" " bait and ice.....	2,240
Paragon.....	69	15	5	" " ".....	1,540
Pershing.....	18	5	2	Shelter, bait and ice.....	
Pet.....	4	2	1	" " ".....	
Phoenix.....	12	2	2	" " ".....	
Pioneer.....	48	10	8	Sell fish.....	2,340
Pioneer III.....	26	5	5	Fuel, bait and ice.....	
Polaris.....	45	10	7	Sell fish.....	1,700
Portlock.....	36	9	5	" " ".....	1,640
Presho.....	14	5	11	Bait and ice.....	
President.....	24	7	7	Sell fish.....	1,760
Prince.....	12	2	1	Shelter.....	
Prosperity.....	25	6	6	Sell fish.....	1,440
Puffin.....	18	4	1	Orders.....	
Radio.....	63	10	7	Sell fish.....	3,320
Ramora.....	4	2	1	Engine trouble.....	
Ranier.....	4	3	6	Sell fish.....	450
Ranier.....	39	9	9	" " ".....	2,080
Rebel M. 1064.....	4	2	1	Shelter, engine trouble.....	
Reliance.....	8	4	3	Sell fish.....	140
Reliance.....	11	4	7	Fuel, bait and ice.....	
Reliance.....	14	4	4	Sell fish.....	600
Reliance I.....	19	5	5	" " ".....	380
Reliance.....	25	5	1	" " ".....	80
Repeat.....	14	4	3	Bait and ice.....	
Republic.....	20	5	1	" " ".....	
Republic.....	51	15	6	Sell fish.....	1,620
Resolute.....	47	10	9	" " ".....	3,500
Restitution.....	24	5	9	Bait and ice.....	
Roald Amundsen.....	22	6	6	Sell fish.....	800
Roamer.....	5	3	1	Shelter.....	
Romance.....	8	2	1	" " ".....	
Rosario.....	16	5	2	" " , bait and ice.....	
Roosevelt.....	18	5	2	Bait and ice.....	
Royal.....	2	1	1	Sell fish.....	20
Royal.....	15	5	7	Bait, ice.....	
Ruth.....	8	4	1	Sell fish.....	40
Ruth May.....	13	2	1	Shelter.....	
S. 896.....	3	2	1	" " ".....	
Sadie K.....	16	5	1	Engine trouble.....	
Salome.....	7	2	2	Shelter.....	
Sammy.....	8	2	1	" " ".....	
Sea Bird.....	5	2	1	" " ".....	
Sea Otter.....	4	3	1	" " ".....	
Seattle.....	55	11	4	Sell fish.....	1,380
2nd Mate.....	3	1	1	Shelter.....	
Selma J.....	9	4	10	" " , bait and ice.....	



LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1927—*Concluded*

Name of Vessel	Tonnage	Number of men in crew	Number of times entered	Reasons for entry	Quantity of fish landed
					cwss.
Senator.....	11	7	5	Sell fish.....	1,520
Sentinel.....	21	6	6	".....	1,380
Seymour.....	44	13	2	" , supplies.....	360
Sherman.....	18	5	4	".....	640
Sien d's.....	36	9	1	Bait and ice.....	
Silver Wain.....	4	2	1	Shelter.....	
Sirius.....	17	4	9	Sell fish.....	1,080
Sitka.....	50	10	7	".....	2,880
S.L. 60.....	4	2	1	Shelter.....	
Spray.....	20	6	3	Sell fish, bait and ice.....	560
Stampede.....	5	1	1	Shelter.....	
Star.....	18	3	2	Sell fish.....	180
Sumner.....	34	10	11	" , fuel.....	2,060
Sunde EE.....	36	9	4	".....	940
Sunset.....	37	9	9	".....	2,880
Superior.....	18	5	2	Bait and ice.....	
Superior.....	26	5	4	Sell fish.....	900
Swan.....	9	4	13	Shelter, bait and ice, supplies.....	
Sylvia.....	30	6	7	Bait and ice.....	
T. 435.....	5	2	1	Supplies.....	
Tahoma.....	18	6	8	Sell fish.....	1,120
Tatoosh.....	23	6	9	".....	2,360
Taybelle.....	8	2	1	Engine trouble.....	
Teddy J.....	13	5	6	Sell fish.....	800
Texas.....	16	5	3	Shelter, bait and ice.....	
Thelma II.....	26	6	7	Sell fish, bait and ice, orders.....	160
Thor.....	4	2	1	".....	20
Thor.....	25	13	8	" , bait and ice.....	1,380
Tordenskjold.....	39	13	10	" " ".....	400
Trinity.....	41	10	6	".....	1,720
Trondreu.....	5	2	1	Shelter.....	
Tyee.....	13	4	3	Sell fish.....	380
Umatilla.....	8	2	5	Shelter.....	
Unamak.....	10	3	1	Sell fish.....	80
Unimak.....	22	5	10	Bait and ice.....	
Urama.....	27	7	1	Sell fish.....	160
Uranus.....	15	5	10	" , fuel, bait and ice, orders.....	80
Vansee.....	58	11	7	".....	2,680
Vega.....	6	2	1	Shelter.....	
Velero.....	6	3	10	Bait and ice.....	
Velva.....	6	2	4	Shelter, bait and ice.....	
Venture.....	36	15	2	Sell fish, bait and ice.....	180
Venus.....	4	3	2	".....	140
Venus.....	25	7	7	".....	1,480
Vermont.....	35	8	1	Fuel.....	
Verna.....	5	2	1	Shelter.....	
Vesta.....	17	5	10	Bait and ice, land fish, orders.....	5
Vestura.....	5	3	1	Sell fish.....	40
Viking.....	11	4	14	" , shelter, bait and ice.....	450
Virginia.....	33	6	1	".....	200
Visitor.....	4	2	1	".....	40
Volunteer.....	20	5	2	Bait and ice.....	
Wabash.....	6	3	10	Sell fish.....	360
Wa Wa K.903.....	4	1	1	Shelter.....	
Wanderer.....	4	2	1	Supplies.....	
Wave.....	7	3	12	Sell fish.....	720
Wesley.....	9	3	13	Shelter, bait, ice, supplies.....	
West.....	9	2	1	".....	
Western.....	41	9	10	Sell fish.....	4,420
Westjord.....	17	5	2	" , fuel.....	120
White Star 1177M.....	4	2	1	Shelter.....	
White Star.....	17	5	13	" , bait and ice, land fish.....	3
Wilson.....	19	5	11	Sell fish, bait and ice.....	440
Wireless.....	19	5	14	" " , shelter, ice, supplies.....	520
Withelema.....	17	5	1	Bait, ice.....	
Wizard.....	49	10	6	Sell fish, bait and ice.....	300
Woodrow.....	23	5	11	" " ".....	120
Wyaach.....	4	2	1	Shelter.....	
Yakutat.....	41	10	8	Sell fish, bait and ice.....	2,280
Yaquina.....	29	6	6	Bait, ice.....	
Yellowstone.....	22	6	2	Sell fish.....	180
Yukon.....	31	7	8	".....	2,140
Zenith.....	47	10	8	" bait, ice.....	2,520

## APPENDIX NO. 7

The following is a statement of the different kinds of licenses issued by the different Inspectors, during the 1927-28 season:—

## MAGDALEN ISLANDS, QUEBEC—INSPECTOR S. T. GALLANT

Kind of Licenses—	Number of Licenses Issued
Lobster fishing licenses.....	665
Lobster packing licenses.....	15
Lobster packing extensions—10	
Fish cannery licenses.....	1
Certificates under Sec. 63—3	
Herring trap-net licenses.....	25 (1 Cod Trap-net)
Herring seine licenses.....	21
	<hr/> 727

## PRINCE EDWARD ISLAND—INSPECTOR S. T. GALLANT

Lobster fishing licenses.....	2,110
Lobster packing licenses.....	133
Lobster Packing extensions—62.	
Oyster fishery licenses.....	182
Quahaug fishing licenses.....	Nil
Fish cannery licenses.....	9
Certificates under Sec. 63—7.	
Reduction works licenses.....	Nil
Trap-net fishing licenses.....	3
Lobster Pound licenses.....	1
Smelt gill-net licenses.....	332
Smelt bag-net licenses.....	257
	<hr/> 3,027

## NOVA SCOTIA—DISTRICT No. 1—INSPECTOR A. G. McLEOD

Lobster fishing licenses.....	2,006
Lobster packing licenses.....	47 (1 cancelled)
Lobster packing extensions—37.	
Oyster fishery licenses.....	98
Fish cannery licenses.....	3
Certificates under section 63—48 (5 lost).	
Reduction works licenses.....	Nil
Gaspereau & alewife fishing licenses (herring weir forms used).....	3
Trap-net fishing licenses.....	38
Salmon gill-net or drift-net licenses.....	26
Salmon trap-net, pound-net or weir license.....	175
Special angling permits.....	78
Lobster pound licenses.....	Nil
Smelt bag-net licenses.....	20
Smelt gill-net licenses.....	226
	<hr/> 2,720 (1 cancelled)

## NOVA SCOTIA—DISTRICT No. 2—INSPECTOR D. H. SUTHERLAND

Lobster fishing licenses.....	3,175 (1 cancelled)
Lobster packing licenses.....	51 (1 cancelled)
Lobster packing extensions.....—69 (2 cancelled)	
Oyster fishery licenses.....	95
Quahaug fishery licenses.....	Nil
Shad gill-net or drift net license.....	18
Fish cannery licenses.....	3
Certificates under section 63—93.	
Reduction works licenses.....	4 (1 cancelled)
Seine licenses.....	139
Herring weir licenses.....	13
Trap-net fishing licenses.....	91
Salmon gill-net or drift-net licenses.....	358 (4 cancelled)
Salmon trap-net, pound-net or weir licenses.....	162 (3 cancelled)
Special angling permits.....	71
Scallop fishery licenses.....	7
Lobster pound licenses.....	2
Smelt bag-net licenses.....	212
Smelt gill-net licenses.....	290
Lobster pound certificates—74.	
	<hr/> 4,691 (10 cancelled)

## NOVA SCOTIA—DISTRICT No. 3—INSPECTOR H. H. MARSHALL

Kind of Licenses— <i>Continued</i> —	Number of Licenses issued
Lobster fishing licenses.....	3,301
Lobster packing licenses.....	31
Lobster packing extensions—21.....	
Shad gill-net or drift-net licenses.....	3
Fish cannery licenses.....	19
Certificates under section 63—174.....	
Reduction works licenses.....	10 (1 cancelled)
Herring weir licenses.....	64
Trap-net fishing licenses.....	129 (2 cancelled)
Salmon gill-net or drift-net licenses.....	239
Salmon trap-net, pound-net or weir licenses.....	53
Salmon net permits.....	42
Special angling permits.....	704
Scallop fishery licenses.....	321
Lobster pound licenses.....	12 (1 cancelled)
Smelt bag-net licenses.....	24
Smelt gill-net licenses.....	76
Lobster pound certificates—155.....	
	<hr/>
	5,028 (4 cancelled)

## NEW BRUNSWICK—DISTRICT No. 3—INSPECTOR H. E. HARRISON

Shad gill-net or drift-net licenses.....	282
Sturgeon fishery licenses.....	13
Whitefish fishery licenses.....	13
Salmon net permits.....	172
Gaspereau pound-net or trap-net licenses.....	27
Salmon gill-net or drift-net licenses.....	120
Salmon trap-net, pound-net or weir licenses.....	109
Bass fishery licenses.....	43
Smelt gill-net licenses.....	1
Smelt bag-net licenses.....	Nil
	<hr/>
	780

## NEW BRUNSWICK—DISTRICT No. 1—INSPECTOR J. F. CALDER

Lobster fishing licenses.....	532
Shad gill-net or drift-net licenses.....	46
Fish cannery licenses.....	10
Certificates under section 63—2.....	
Reduction works licenses.....	3
Herring weir licenses.....	574
Clam permits.....	103
Salmon gill-net or drift-net licenses.....	87
Herring seine licenses.....	1
Scallop fishery licenses.....	2
Lobster pound licenses.....	4
Smelt gill-net licenses.....	Nil
Smelt bag-net licenses.....	Nil
Lobster pound certificates—130.....	
Lease of dark harbour fishing privileges—1.....	
	<hr/>
	1,362

## NEW BRUNSWICK—DISTRICT No. 2—INSPECTOR A. L. BARRY

Lobster fishing licenses.....	1,980
Lobster packing licenses.....	126 (1 cancelled)
Lobster packing extensions 32.....	
Oyster fishery licenses.....	673
Quahaug fishery licenses.....	69
Shad gill-net or drift-net licenses.....	Nil
Fish cannery licenses.....	4
Certificates under section 63—212.....	
Reduction works licenses.....	Nil
Herring weir licenses.....	Nil
Gaspereau pound net or trap-net licenses.....	32
Salmon gill-net or drift-net licenses.....	76
Salmon trap-net, pound-net or weir licenses.....	402
Scallop fishery licenses.....	Nil
Lobster pound licenses.....	4
Bass fishery licenses.....	32
Smelt gill-net licenses.....	138
Smelt bag-net licenses.....	5,502
Lobster pound certificates—236.....	
	<hr/>
	9,038 (1 cancelled)



## MANITOBA—INSPECTOR J. B. SKAPTASON

Kind of Licenses—Continued—	Number of licenses issued
Reduction works licenses (issued by R.C.M.P.).....	1
Commercial sturgeon fishery licenses.....	142
Domestic sturgeon fishery licenses.....	118
Special angling permits.....	560
Pound-net licenses.....	16
Special fishery licenses.....	3,647 (4 cancelled)
Settler's permits.....	1,369
Receipt books—57.	
	5,853 (4 cancelled)

## SASKATCHEWAN—INSPECTOR G. C. MACDONALD

Commercial sturgeon fishery licenses.....	Nil
Domestic sturgeon fishery licenses.....	Nil
Special angling permits.....	214
Commercial and fisherman's fishery licenses.....	861 (14 cancelled)
Domestic fishery licenses.....	137 (1 cancelled)
Indian and half-breed permits.....	853
	2,065 (15 cancelled)

## ALBERTA—INSPECTOR R. T. RODD

Fish cannery licenses.....	Nil
Special angling permits.....	5,221 (3 cancelled)
Receipt books—885 (3 cancelled)	
Indian and half-breed permits.....	952
Commercial and fisherman's fishery licenses.....	1,401 (15 cancelled)
Domestic fishery licenses.....	223 (10 cancelled)
	7,797 (28 cancelled)

## BRITISH COLUMBIA—INSPECTOR J. A. MOTHERWELL

Fish cannery licenses.....	10
Reduction works licenses.....	27
Special angling permits.....	45
Abalone fishery licenses.....	1
Indian permits.....	830 (6 cancelled)
Crab fishery licenses.....	148 (1 cancelled)
Smelt or sardine fishery licenses.....	69
Sturgeon fishery licenses.....	Nil
Miscellaneous licenses.....	160 (2 cancelled)
Salmon fishery licenses.....	4,886 (7 cancelled)
Salmon trolling licenses.....	3,005 (2 cancelled)
Salmon trap-net licenses.....	7
Salmon purse seine licenses.....	482 (1 cancelled)
Salmon drag-seine licenses.....	46
Licenses to a captain of a salmon (purse or drag) seine boat.....	414 (2 cancelled)
Salmon curing licenses.....	38 (1 cancelled)
Salmon cannery licenses.....	75
Boat license to buy fresh salmon from fishermen.....	263
License to a person engaged in cold storage or fish packing to buy fresh salmon from fishermen.....	69
Grayfish fishery licenses.....	237
Licenses to assistant operator of salmon (purse or drag) seine used under license No.....	2,156
Licenses to assistant in a boat used in operating a salmon gill-net or drift-net.....	1,111 (1 cancelled)
Cod fishery licenses.....	468 (1 cancelled)
Herring or pilchard gill-net or drift-net licenses.....	34
Herring or pilchard drag-seine licenses.....	1
Herring or pilchard purse-seine licenses.....	89
License to captain of herring or pilchard seine boat.....	80 (2 cancelled)
Herring or pilchard curing licenses.....	30
Whale factory licenses.....	2
Counterfoil of pelagic sealing certificates—17.	
	14,783 (26 cancelled)

## YUKON

Special fishery licenses.....	34 (1 cancelled)
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## PACIFIC COAST

Licenses to United States fishing vessels.....	226
Total.....	58,131 (90 cancelled)

## APPENDIX NO. 8

RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28

NOVA SCOTIA—DISTRICT No. 1—Inspector, A. G. McLEOD

Pros. Nos.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
1	Louis Varence	Fishing trout through the ice	Lake Ainslie	Fined \$200.00 and costs. Suspended sentence. Confiscation of 1 axe, 7 hooks, lines, and 4 trout.
2	Edward Young	Being unlawfully in possession of berried lobster	North Sydney	Fined \$15.00 and costs and confiscation of 1 berried lobster.
3	Edward Young	Unlawfully fishing for lobsters, violation of Sec. 18 of Regs.	Low Point, C.B.	Fined \$1.00 and costs and confiscation of 14 lobsters.
4	Henry Chiasson	Netting salmon	Barrack Pool, Margaree River	Fined \$10.00 and had confiscated 1 salmon net.
5	Pierre Fribould and Alfred Deveaux	Fishing lobsters after close season	North Sydney	Fined \$9.75 and costs each and confiscation of 4 lobster ring traps and 2 lobsters.

NOVA SCOTIA—DISTRICT No. 2—Inspector, D. H. SUTHERLAND

1	Bert Tait	Illegal fishing of salmon	Powers Plant near Oxford	Fined \$5.00 and costs and had confiscated 1 salmon net.
2	Melvin Weeks	Fishing within 25 yards of the lower entrance to a dam.	Ship Harbour	Fined \$50.00 and costs or 30 days in jail—Suspended; and had confiscated from him 2 dip nets.
3	Melvin Weeks	"	"	Confiscation of 2 dip-nets.
4	Melvin Weeks	Resisting arrest, violation of Sec. 50	"	Confiscation of 2 dip-nets.
5	Mrs. John Muirhead	Having lobsters in her possession out of season	New Glasgow	Fined \$50.00 and confiscation 4 berried lobsters.
6	Geo. Mason	Having lobsters in his possession out of season	Ponds, Pictou County	Fined \$50.00 and costs and had confiscated 62 lobsters.
7	Fred Calquhoun	Having lobsters in his possession out of season	Little Harbour	Fined \$50.00 and costs and had confiscated 92 lobsters.
8	Warren Mills	Having lobsters in his possession out of season	Bayview	Fined \$5.00 and costs and had confiscated 54 lobsters.
9	Colin MacDonald	Having lobsters in his possession out of season	Bayview	Fined \$10.00 and costs or 30 days in jail; 54 lobsters confiscated jointly with W. Mills, Pros. 8.
10	John Muirhead	Selling lobsters in town	Westville	Fined \$50.00 and costs.

## NOVA SCOTIA—DISTRICT No. 3—Inspector, H. H. MARSHALL

11	Carl Cochrane.....	Illegal salmon fishing.....	Port au Pique River.....	Fined \$5.00 and confiscated 1 salmon spear.
12	Clinton Miller.....	Illegal lobster fishing.....	East Wallace.....	Fined \$50.00 and costs and had confiscated 1 motor boat, 1 crate, 2 bags of lobsters.
13	R. M. Trenholm.....	Illegal fishing, having lobsters in possession.....	Pugwash, closed district.....	Fined \$50.00 and costs or 50 days in jail.
14	Roy Howard.....	Illegal salmon fishing.....	Wallace River.....	Fined \$12.00 and costs.
15	Geo. Smith.....	Having undersized lobsters in his possession.....	Halifax Harbour.....	Fined \$25.00 and costs and had confiscated from him 28 lobsters.
16	Arthur Billard.....	Having undersized lobsters in his possession.....	Halifax Harbour, near George Island.....	Fined \$25.00 and costs and had confiscated from him 25 lobsters.
17	Purney Hurshman.....	Having lobsters under 9" in length.....	Near Halifax.....	Fined \$35.00 and costs and had confiscated from him 64 lobsters.
18	Charles P. Hurshman.....	Having lobsters under 9" in length.....	Near Halifax.....	Fined \$70.00 and costs or 60 days in jail, and had confiscated from him 64 lobsters. (These are the same lobsters as in Pros.. No. 17.)
1	Temory Dorey.....	Violation of Sub.-sec. 9, Sec. 36 of Fishery Act.....	LaHave River, near Bridge-water.....	Dismissed.
2	Chas. Weagle.....	Violation of Sub.-sec. 9, Sec. 36 of Fishery Act.....	LaHave River, near Bridge-water.....	Fined \$25.00 and costs or 30 days in jail. Sent to jail.
3	Artemas Ramey.....	Fishing for salmon illegally.....	LaHave River, near Bridge-water.....	Fined \$20.00 and costs or 20 days in jail.
4	Angus Wile.....	Fishing for salmon illegally.....	LaHave River, near Bridge-water.....	Fined \$20.00 and costs or 20 days in jail.
5	George Smith.....	Taking a salmon illegally.....	Petite Riviere.....	Fined \$5.00 and costs and had confiscated 1 dip-net.
6	Harry Dolliver.....	Fishing for lobsters without a license.....	Port Medway Harbour.....	Fined \$5.00 and costs.
7	Raymond Solig.....	Setting salmon net without a license.....	South West Cove.....	Fined \$10.00 and costs.
8	Zacharias Conrad.....	Setting salmon net without a license.....	Great Island.....	Fined \$10.00 and costs.
9	Ernest Weagle.....	Illegally taking a salmon.....	LaHave River, Bridgewater.....	Fined \$100.00 and costs and 3 months in jail, and in default of payment, for a further period of one month.—Sent to jail.
10	Harold Kaizer.....	Having 4-inch gill-net, setting above the limit.....	West side of Gold River.....	Fined \$10.00 and costs.
11	Angus Nowe.....	Fishing for lobsters without a license.....	Medway Harbour.....	Fined \$5.00 and costs.
12	Norman Wymot.....	Using a swing-net.....	McLeod's Falls.....	Dismissed.
13	William Ramey.....	Using a swing-net.....	McLeod's Falls.....	Dismissed.
14	Chesley Kennis.....	Fishing a square net during weekly close season.....	Gaspereau, King County.....	Fined \$20.00 and costs.
15	Edward Newcomb.....	Obstructing river with wire netting.....	Melanson.....	Fined \$20.00 and costs and confiscated from him roll of wire netting.
16	Norman Adams.....	Dipping a salmon.....	Gold River.....	Fined \$5.00 and costs.
17	Arthur Hatt.....	Setting a net at Stillwater.....	Gold River.....	In favour of defendant; mistake in identity.



RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—*Continued*

NOVA SCOTIA DISTRICT—No. 3—*Concluded*

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
18	Frank Mosher.....	Dipping for salmon.....	Middle River.....	Fined \$5.00 and costs.
19	Fred Countway.....	Dipping for salmon.....	Middle River.....	Fined \$5.00 and costs.
20	W. Fitch.....	Illegal fishing.....	Petite Riviere.....	Fined \$25.00 and costs.
21	Milton Corkum.....	Illegal fishing.....	Petite Riviere.....	Fined \$25.00 and costs.
22	Leonard Coleman.....	Unlawfully using a net to sweep or fish for salmon or shad.	Stevens Pool, Nictaux River.....	Fined \$50.00 and share of costs or one month in jail, and had confiscated one net.
23	Irving Morse.....	Unlawfully using a net to sweep or fish for salmon or shad.	Stevens Pool, Nictaux River.....	Fined \$50.00 and share of costs, or one month in jail, and had confiscated one net. This was the same net as in Pros. No. 22.
24	Harding Coleman.....	Unlawfully using a net to sweep or fish for salmon or shad.	Stevens Pool, Nictaux River.....	Fined \$50.00 and share of costs or one month in jail, and had confiscated one net. This was the same net as in Pros. No. 22.
25	Rolland Young, Angus Levy and Harvey Slumwhite.	Having lobster traps on board their boat.....	Tancook.....	Fined \$2.00 each and costs
26	Alden Roy.....	Fishing contrary to Sec. 4 (O.C. 17th Mar.) (O.C. 1st April, 1922).	Port Mouton Island.....	Fined \$50.00 and costs and confiscation of 3 lobster traps.
27	Earl Fisher.....	Contrary to Sec. 4 (O.C. 17th Mar., 1922) (O.C. 1st April, 1922).	Hunts Point.....	Fined \$15.00 and costs or 30 days in jail.
NEW BRUNSWICK—DISTRICT NO. 1—Inspector A. L. BARRY				
1	Albert Henderson.....	Having illegal lobsters in his possession.....	Grand Manan.....	Fined \$25.00.
2	The Mahoney Lumber Co.....	Allowing sawdust to enter Memramcook River.....	Near Calhoun.....	Fined \$20.00 and costs.
3	Roy MacAllister.....	Attempting to fish for shad in non-tidal waters.....	Petitcodiac River, near John Addy's Farm.	Fined \$10.00 and costs and had confiscated from him 60 ft. of net and 100 ft. cord rope.
4	C. I. Mills.....	Attempting to fish for shad non-tidal waters.....	Petitcodiac River, near John Addy's Farm.	Fined \$10.00 and costs and had confiscated from him 60 ft. of net and 100 ft. cord rope.
5	Chas. Alward.....	Attempting to fish for shad non-tidal waters.....	Petitcodiac River, near John Addy's Farm.	Fined \$10.00 and costs and had confiscated from him 60 ft. of net and 100 ft. cord rope.
6	Wallace McCarthy.....	Illegal lobster fishing.....	McBoyd Head.....	Fined \$200.00—Allowed to stand. Had confiscated from him 3 lobster traps, buoys, and 75 fms. lines, 6 lobster traps, and 1 crate.

7	Vincent McCarthy.....	Illegal lobster fishing.....	McBoyd Head.....	Fined \$200.00—Allowed to stand. Had confiscated from him—3 lobster traps, buoys, and 75 fms. lines, 6 lobsters 1 crate.
8	Geo. Stewart.....	Having illegal lobsters in his possession.....	Near Seal Cove.....	Fined \$25.00 and costs and had confiscated from him 7 illegal lobsters.
9	Freeman Dakin.....	Having illegal lobsters in his possession.....	Long Pond, Grand Manan.....	Fined \$25.00 and costs and confiscated from him 15 illegal lobsters.
10	William Dakin.....	Having illegal lobsters in his possession.....	Long Pond, Grand Manan.....	Fined \$25.00 and costs and confiscated from him 15 illegal lobsters.
11	Vernon Urquhart.....	Having illegal lobsters in his possession.....	Brown's Point Grand Manan.....	Fined \$50.00 and costs and had confiscated from him 63 illegal lobsters.
12	Harold Foster.....	Having illegal lobsters in his possession.....	Grand Harbour.....	Fined \$50.00 and costs—Allowed to stand.
13	E. L. Conley.....	Having illegally caught lobsters in his possession.....	St. George.....	Fined \$150.00 and costs and confiscated from him 500 lbs. lobsters.
14	William York.....	Illegal lobster fishing.....	Gardners' Creek.....	Fined \$200.00 Allowed to stand.
15	Roscoe Wilcox.....	Having illegal lobsters in his possession.....	Near Wood Island, Grand Manan.....	Fined \$25.00 and costs. Allowed to stand. Had confiscated from him 15 illegal lobsters.
16	Cecil Wilcox.....	Having illegal lobsters in his possession.....	Near Wood Island, Grand Manan.....	Fined \$25.00 and costs. Allowed to stand. Had confiscated from him 15 illegal lobsters.
17	Hum Fong.....	Selling undersized lobsters.....	King Cafe, St. John.....	Fined \$25.00. Allowed to stand. Had confiscated 25 boiled lobsters.
18	Wilfrid C. Day.....	Selling undersized lobsters.....	Hygienic Fish Market, St. John.....	Fined \$25.00.
19	Chas. Brown.....	Illegally fishing for salmon.....	Nixon Bridge, Albert Co.....	Fined \$10.00 and had confiscated from him 1 salmon spear.

## NEW BRUNSWICK—DISTRICT NO. 2—INSPECTOR J. F. CALDER

1	Valentine Muzzerall.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
2	Joseph D. Martin.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
3	Seberin Savoie.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
4	Ernest Durrell.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
5	John C. Martin.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
6	Rae Gibbs.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
7	John Muzzerall.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.
8	Edward J. Martin.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.....	Fined \$1.00 and costs.

## RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—Continued

## NEW BRUNSWICK—DISTRICT No. 2—Concluded

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
9	Lawrence Martin.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
10	Lewis Collet.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
11	Rodge Thibideau.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
12	John Muchure.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
13	Wilfrid Thibideau.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
14	Fred Durrell.....	Setting lobster gear before the season opened.....	Baie Ste. Anne, Parish of Hardwicke.	Fined \$1.00 and costs.
15	Ben Legere.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
16	Beno Gallant.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
17	Clarence Gallant.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
18	Wright Gibbs.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
19	Edmore Theriault.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
20	Anthony Turbid.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
21	Clarence Jimmo.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
22	Cyrilac Gaudet.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
23	William J. Manuel.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
24	Allan Gibbs.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
25	Cyrice Chiasson.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
26	Joseph Turbid.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
27	Mat Spley.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
28	Isaac Theriault.....	Setting lobster gear before the season opened.....	Pt. Escuminac.....	Case withdrawn.
29	Angus Tebo.....	Setting lobster gear before the season opened.....	Baie St. Anne.....	Fined \$1.00 and costs.
30	Joseph Savoy.....	Setting lobster gear before the season opened.....	Baie St. Anne.....	Fined \$1.00 and costs.
31	David Savoy.....	Setting lobster gear before the season opened.....	Baie St. Anne.....	Fined \$5.00.
32	Bernard Williston.....	Setting lobsters caught in close season.....	Bay du Vin.....	Fined \$30.00 and costs.
33	Theophile Brau.....	Fishing for oysters.....	Buctouche Bay.....	Suspended sentence.
34	Alderic Melanson.....	Fishing for oysters.....	Buctouche Bay.....	Fined \$50.00 and costs.
35	Peter Joe and son Philip.....	Fishing for oysters in the close season.....	Miramichi Bay.....	Fined \$1.00 and had confiscated from him 2½ bbls. oysters.
36	Octave Duguay.....	Fishing for lobsters in close season.....	St. Morin, Shippegan Island.....	No fine-reprimanded.
37	Gordon Murdock.....	Fishing for oysters in close season.....	Hardwicke.....	Fined \$15.00 and had confiscated from him 7½ bbls. oysters.
38	Melvin McLean.....	Fishing for oysters in close season.....	Hardwicke.....	Fined \$15.00.
39	Allen Gregan.....	Fishing for oysters in close season.....	Hardwicke.....	Fined \$15.00.



40	Joseph Washburn.....	Neglecting to remove salmon net pickets.....	Loggieville.....	Fined \$1.00.
41	Amedee Jones.....	Having in possession illegally packed lobsters.....	Island River.....	Sentence deferred.
42	William Duley.....	Failing to remove salmon pickets in close season.....	Loggieville.....	Fined \$1.00.
43	Alex. Harding.....	Fishing for salmon in close season.....	Tabusintac River.....	Fined \$5.00.
44	Allan F. Loggie.....	Fishing for salmon with small mesh net.....	Loggieville.....	Fined \$10.00 and costs. Allowed to stand.
45	Alexander Fenton.....	Failing to remove salmon pickets at close of season.....	Chatham.....	Fined \$1.00 and costs.
46	A. G. Wallace.....	Violation of weekly close season for salmon fishing.....	Upper Charlotte Co.....	Fined \$5.00 and costs.
47	D. G. Stewart.....	Violation of weekly close season for salmon fishing.....	Dalhousie.....	Fined \$5.00 and costs.
48	Robert McMillan.....	Violation of weekly close season for salmon fishing.....	Upper Charlotte Co.....	Fined \$5.00 and costs.
49	Walter Anderson.....	Violation of weekly close season for salmon fishing.....	New Mills.....	Fined \$5.00 and costs.
50	Ross Johnston.....	Interfering with an officer.....	Tabusintac River.....	Not guilty.
51	Ross Johnston.....	Fishing for salmon in close season.....	Tabusintac River.....	Not guilty.
52	Mildred Herbert.....	Fishing for salmon in close season.....	Tabusintac River.....	Not guilty.
53	Mildred Herbert.....	Interfering with an officer.....	Tabusintac River.....	Not guilty.
54	Richard Murphy.....	Interfering with an officer.....	Tabusintac River.....	Not guilty.
55	Richard Murphy.....	Fishing for salmon in close season.....	Tabusintac River.....	Fined \$50.00 and costs.
56	Nicholas Thibodeau.....	Fishing for lobsters in close season.....	Richibucto Cape.....	Fined \$5.00 and costs.
57	Amedee Thibodeau.....	Fishing for lobsters in close season.....	Richibucto Cape.....	Fined \$5.00 and costs.
58	Adelard Caisie.....	Fishing for lobsters in close season.....	Richibucto Cape.....	Fined \$5.00 and costs.
59	Leonard Robertson.....	Fishing for salmon in close season.....	Tabusintac River.....	Fined \$25.00.
60	Mike Robertson.....	Fishing for salmon in close season.....	Tabusintac River.....	Fined \$25.00.
61	Clay Williston.....	Fishing for smelts without a license.....	Tabusintac River.....	Fined \$25.00.
62	Wilfrid Ferguson.....	Buying bag-net smelts before opening date.....	Miramichi River.....	Fined \$15.00 and costs.
63	D. W. Hoegg and Co. per H. J. Gilman.....	Violating weekly close season for salmon fishing.....	Upper Charlotte Co.....	Fined \$10.00.

## NEW BRUNSWICK—DISTRICT No. 3—Inspector, H. E. HARRISON

1	C. H. Wiggins.....	Illegal shad fishing.....	Washademoak Lake.....	Fined \$10.00 and costs and had confiscated from him 1 shad net.
2	Wilfrid Siderquest.....	Water pollution.....	Baird's Brook.....	Fined \$20.00 and costs.
3	Lee McCutcheon.....	Illegal shad fishing.....	Washademoak Lake.....	Fined \$10.00 and costs and had confiscated 1 shad net.
4	Gilbert Robinson.....	Setting net in non-tidal water without a permit.....	Kennebecasis River.....	Fined \$20.00 and costs and had confiscated from him 1 old net.
5	Vincent Copp.....	Fishing without permit and with illegal materials.....	Northwest Miramichi River.....	Action withdrawn on payment of costs by defendant. Had confiscated illegal wire material, 3 grise, 1 trout.
6	Burton Norton.....	Fishing without permit and with illegal materials.....	Northwest Miramichi River.....	Action withdrawn on payment of costs by defendant.
7	Kenneth Henderson.....	Fishing for salmon with a net over length.....	St. John River.....	Fined \$25.00 and costs. Had confiscated from him 1 salmon net and costs and some wire netting.
8	Wilfrid Verett.....	Water pollution.....	Ledge Stream.....	Fined \$20.00. Suspended sentence.
9	James Kinrade.....	Fishing for shad during closed season.....	Washademoak Lake.....	Fined \$10.00 and costs.
10	Thomas Gill.....	Water pollution.....	Barnaby River.....	Fined \$10.00 and costs.
11	John Guest, Sr.....	Water pollution.....	Monquart Stream.....	Fined \$20.00.

## RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—Continued

## NEW BRUNSWICK—DISTRICT 3—Concluded

Pros. No.	Name of Offender	Name of Offence	Place of Offence	Result of Prosecution
12	A. G. Sloot.....	Fishing with a net for salmon without a license.....	St. John River.....	Fined \$20.00 and costs. Had confiscated 1 salmon net.
13	James Robinson.....	Angling for salmon with bait.....	Kennebecasis River.....	Fined \$10.00 and costs and had confiscated from him 1 bamboo rod and line.
14	Harvey Robinson.....	Angling for salmon with bait.....	Kennebecasis River.....	Fined \$10.00 and costs. Had confiscated from him 1 bamboo rod and line.
15	J. J. Jackson.....	Assisting at angling for salmon with bait and gaff.....	Kennebecasis River.....	Fined \$10.00 and costs. Had confiscated from him 1 fish gaff.
16	Paul Plourde.....	Water pollution.....	Four Mile Brook and Little River.....	Fined \$20.00 and costs.
17	Sanford Stewart.....	Having illegally caught salmon in his possession.....	Millerton.....	Fined \$5.00 and costs and had confiscated from him 228 pounds salmon and 1 Ford automobile.
18	James Minor.....	Illegally fishing for salmon.....	Southwest Miramichi River.....	Fined \$20.00 and costs. Had confiscated from him 150 feet woven wire.
19	Alexander Pratt.....	Illegally fishing for salmon.....	Southwest Miramichi River.....	Fined \$20.00 and costs. Suspended. Had confiscated from him woven wire.
20	Lloyd Gilks.....	Having in possession illegally caught salmon.....	Blackville.....	Fined \$20.00 and costs. Suspended. Had confiscated from him 2 salmon and 1 salmon net.
21	Elvin Holmes.....	Having in possession illegally caught salmon.....	Blackville.....	Fined \$20.00 and costs. Suspended.
22A	Peter Harris.....	Fishing for salmon with a net without a permit.....	Miramichi River.....	Fined \$20.00 and costs. Suspended.
23	Sellers Fairley.....	Killing salmon with spear and torch.....	Southwest Miramichi River.....	Fined \$10.00 and costs. Had confiscated 14 salmon, 1 fire basket, 2 spears, 1 canoe.
24	Howard Fairley.....	Killing salmon with spear and torch.....	Southwest Miramichi River.....	Fined \$10.00 and costs.
25	Leo Solomon.....	Killing salmon with spear and torch.....	St. John River.....	Fined \$5.00 and costs.
26	Frank Gilmore.....	Drifting with net for salmon.....	St. John River.....	Fined \$10.00 and costs.
PRINCE EDWARD ISLAND—Inspector, S. T. GALLANT				
1	Peter Matthews.....	Having lobsters in his possession in close season.....	Alberton.....	Fined \$100.00 and costs. Given one month to pay during which time the man died.
2	Alfred Ahearn.....	Having lobsters in his possession in close season.....	Alberton.....	Fined \$75.00 and costs.
3	Chas. Delory.....	Having lobsters in his possession in close season.....	Seal River.....	Fined \$20.00 and confiscation of 1 barrel of oysters.

4	Samuel Fraser.....	Having lobsters in his possession in close season.....	Alberton.....	Fined \$50.00 and costs or 30 days in jail and confiscation of 1 case of lobsters.
5	Joseph A. Clement.....	Having lobsters in possession in close season.....	Roseville.....	Fined \$5.00 and costs or 10 days in jail. Suspended sentence. Confiscation of 4 cases of lobsters.
6	Joseph Clements, Sr.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
7	Adam Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Placed in jail.
8	Geo. E. Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
9	John Jones, Sr.....	Having lobsters in possession in close season.....	Little Miminegash.....	Placed in jail.
10	John Clements.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
11	Fred Clements.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
12	William Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Sent to jail.
13	Albert Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
14	Frank Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
15	Fred Jones.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
16	C. F. Morrissey.....	Having lobsters in his possession in close season.....	Black Marsh.....	Fined \$60.00 and costs or 60 days in jail and had confiscated from him 40 lbs. of lobsters.
17	Michael Francis.....	Obstructing an officer in discharge of duties.....	Waters-at-Lennox Island.....	Twenty days in jail. Suspended sentence.
18	Edward Clements.....	Having lobsters in possession in close season.....	Little Miminegash.....	Fined \$25.00 and costs or 30 days in jail.
19	Alfred Genoit, or Jennings.....	Having lobsters in possession in close season.....	Alberton.....	Fined \$150.00 and costs or 2 months in jail.
20	Geo. Bennett.....	Having lobsters in possession in close season.....	Alberton.....	Fined \$25.00 and costs.
21	Howard Clark.....	Having lobsters in possession in close season.....	Alberton.....	Fined \$65.00.
22	Joseph Gaudet.....	Having lobsters in possession in close season.....	Alberton.....	Fined \$25.00 and costs.
23	Peter Gavin.....	Having lobsters in possession in close season.....	Alberton.....	Fined \$5.00 and costs.

## MANITOBA—Inspector, J. B. SKAPTASSON

1	J. Weisbrod.....	Fishing without permit (violating Sec. 1, F.R.).....	Whitemud River, Gladstone.....	Fined \$5.00 and costs and confiscated from him 1 dip-net.
2	Cyril Timms.....	Fishing without permit (violating Sec. 1, F.R.).....	Whitemud River, Gladstone.....	Suspended sentence. Had confiscated from him 1 dip-net.
3	W. Garth.....	Fishing without permit (violating Sec. 1, F.R.).....	Plum Creek, near Oak Lake.....	Fined \$1.00 and costs. Had confiscated 1 hay fork.
4	L. Wanlin.....	Fishing without permit (violating Sec. 1, F.R.).....	Plum Creek, near Oak Lake.....	Fined \$1.00 and costs. Had confiscated 1 hay fork.
5	S. Sepron.....	Having in possession pickerel in close season, violating Sec. 29, F.R.....	Sandy Hook.....	Fined \$15.00 and had confiscated from him 15 lbs. pickerel.
6	John Aston.....	Fishing during close season, violating Sec. 29, F.R.....	Souris River, near Melita.....	Fined 50c. and costs.
7	Harold Cashin.....	Fishing during close season, violating Sec. 29, F.R.....	Souris River, near Melita.....	Fined 50c. and costs.
8	Winston Holden.....	Fishing during close season, violating Sec. 29, F.R.....	Souris River, near Melita.....	Fined 50c. and costs.
9	Robert Molannet.....	Fishing during close season, violating Sec. 29, F.R.....	Souris River, near Melita.....	Fined 50c. and costs.



RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—Continued

MANITOBA—Concluded

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
10	Albert H. Le Vasseur.....	Having sturgeon in possession during close season, violating Sec. 30, F.R.	Lac du Bonnet.....	Fined \$10.00 and costs and in default 30 days in jail. Had confiscated from him 1 sturgeon and 2 jackfish.
11	Mrs. Rosie Katorin.....	Illegal possession of pickerel in close season, violating Sec. 29, F.A.	448 Magnus Ave., Winnipeg....	Fined \$20.00 and had confiscated 16 lbs. pickerel.
12	D. Kessler.....	Illegal possession of pickerel in close season.....	448 Magnus Ave., Winnipeg....	Fined \$20.00 and had confiscated 8 lbs. pickerel.
13	Mrs. L. Silverberg.....	Illegal possession of pickerel in close season.....	448 Magnus Ave., Winnipeg....	Case dismissed. Had confiscated 2 lbs. pickerel.
14	Stephen Sigurdson.....	Illegal fishing for sturgeon, violating Sec. 30 d and I, F.R.	Lake Winnipeg, vicinity of Pigeon Point.	Fined \$10.00 and costs or 30 days in jail, and had confiscated from him 1 sturgeon net 10" mesh.
15	Stephen Finnon.....	Using illegal mesh nets.....	Vicinity of Blackbear Island....	Fined \$15.00 or 15 days hard labour, and had confiscated from him 5 gill-nets.
16	Hjortur Goodman.....	Illegal fishing for sturgeon, violating Sec. 30 d and I, F.R.	Lake Winnipeg, vicinity of Pigeon Point.	Fined \$10.00 and costs or 30 days in jail.
17	Andrew Fimbogason.....	Illegal fishing for sturgeon, violating Sec. 30 d and I, F.R.	Lake Winnipeg, vicinity of Pigeon Point.	Fined \$10.00 and costs or 30 days in jail.
18	John Anthony.....	Using illegal mesh nets.....	Near Sandy Bar.....	Fined \$10.00 and costs or 30 days in jail.
19	Francis Mackwab.....	Fishing without license.....	Vicinity of Berens River.....	Fined \$10.00 or 10 days hard labour, and had confiscated 3 gill-nets, 1 skiff.
20	Allan Jonosson.....	Illegal mesh nets contrary to Sec. 11 (b), F.R.....	Vicinity of Clements Point. ...	Fined \$20.00 and costs or 30 days hard labour.
21	Stephen Stephanson.....	Using illegal mesh nets.....	Vicinity of West Doghead.....	Fined \$5.00 and had confiscated from him 3 gill-nets.
22	Bjarni Olafson.....	Using illegal mesh nets.....	3 miles north of Mitchell's Camp.	Fined \$1.00 and costs and had confiscated 6 gill-nets.
23	J. Sawanash.....	Fishing sturgeon without license, violating Sec. 1, F.R.	Lake Winnipeg, vicinity Berens River.	Fined \$1.00 and costs and confiscated 8 gill-nets.
24	Ed. O'Hara.....	Fishing illegal mesh sturgeon nets, violating Sec. 30 F.R.	Pigeon River, vicinity Lake Winnipeg.	Fined \$20.00 and costs.
25	Barney O'Hara.....	Fishing illegal mesh sturgeon nets, violating Sec. 30 F.R.	Pigeon River, vicinity Lake Winnipeg.	Case dismissed.
26	Peter Karklin.....	Fishing in the Winnipeg River, violating Sub-sec. E of Sec. 30, F. R.	Winnipeg River, Iac du Bonnet, above Pine Falls.	Case dismissed.
27	Helgi Einarson.....	Fishing with illegal mesh nets, violating Sec. 14, Sub-sec. 4, F.R.	Lake Winnipeg, Berens River	Fined \$25.00 and costs or one month in jail and had confiscated from him 538 lbs. sturgeon, 6½ lbs. caviar, 1 yawl, 1 Johnson 2-cylinder outboard gas engine. Fined \$20.00 and costs and had confiscated from him 10 sturgeon gill-nets.

28	W. A. Lund.....	Using illegal mesh nets violating Sec. 14, Sub-sec. 4, F. R.	Pigeon River.....	Fined \$20.00 and costs and had confiscated from him 7 sturgeon gill-nets.
29	Oli Johnson.....	Using illegal size mesh nets.....	Vicinity of Moose Island, Fisher Bay.	Fined \$1.00 and had confiscated from him 4 gill-nets.
30	Barney Anderson.....	Using illegal size mesh nets.....	Vicinity of Moose Island, Fisher Bay.	Fined \$1.00 and had confiscated from him 4 gill-nets.
31	John Olafson.....	Using illegal size mesh nets.....	Vicinity of Moose Island, Fisher Bay.	Fined \$1.00 and had confiscated from him 4 gill-nets.
32	John Murdock.....	Using illegal size mesh nets.....	Vicinity of Moose Island, Fisher Bay.	Fined \$10.00 or 15 days in jail and had confiscated 2 gill-nets with corks.
33	Alex Frederickson.....	Causing to be used one 4½" mesh net.....	Clear Water Lake.....	Fined \$25.00 and had confiscated from him 1 gill-net, 80 lbs. whitefish, 7 trout.
34	D. G. McDonald.....	Fishing 4½" mesh net, contrary to Sec. 13, Sub-sec. 4B, F. R.	Herb Lake.....	Fined \$20.00 and costs and had confiscated from him 30 boxes of fish, 19 gill-nets.
35	Alfred Ateah.....	Fishing illegal mesh nets.....	Travers Bay, East of Victoria Beach.	Fined \$2.00 and had confiscated from him 5 gill-nets.
36	Sandy Campbell.....	Obstructing passage of fish, Sec. 41, F. Act.....	Waterhen River, vicinity of Lake Winnipegosis.	Fined costs of court.
37	P. B. McLaren.....	Violation of Sec. 29, Fishery Act.....	Rock Lake.....	Fined \$1.00 and costs.
38	Duncan Caughlin.....	Violation of Sec. 29, Fishery Act.....	Rock Lake.....	Acquitted.
39	A. L. Wheeler.....	Violation of Sec. 29, Fishery Act.....	Rock Lake.....	Fined costs of court.
40	Geo. Avery.....	Violation of Sec. 29, Fishery Act.....	Waterhen River, vicinity of Lake Winnipegosis.	Fined \$10.00 and costs and had confiscated from him 4 nets.
41	Archie Marriott.....	Obstructing passage of fish, Fishery Act 41.....	Sandy Bay, N.E. of Amaranth	Fined \$10.00 and costs and had confiscated from him 4 gill-nets.
42	Barney Isfeld.....	Using illegal mesh nets (violating Sec. 9, Sub-sec. D).....	Sandy Bay, N.E. of Amaranth	Fined \$50.00 and costs and had confiscated from him 25 gill-nets.
43	Eric Isfeld.....	Using illegal mesh nets (violating Sec. 9, Sub-sec. D).....	Sandy Bay, N.E. of Amaranth	
44	Barney Isfeld.....	Using illegal mesh nets (violating Sec. 9, Sub-sec. D).....	Sandy Bay, N.E. of Amaranth	

## SASKATCHEWAN.—Inspector, G. C. McDonald

1	Tony Luitz.....	Fishing in close season contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
2	Philip Selropp.....	Fishing in close season contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
3	Philip Selinger.....	Fishing in close season contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
4	Mike Burkart.....	Fishing in close season, contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
5	Leo Selinger.....	Fishing in close season, contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
6	Chas. Ell.....	Fishing in close season, contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.
7	Frank Thomas.....	Fishing in close season, contrary to Sec. 21 of the Regulations.	Near Valhalla Island, Long Lake.	Fined \$1.00 or 7 days in jail.

RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—*Continued*

SASKATCHEWAN—*Concluded*

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
8	Geo. Schropp.....	Fishing in close season, contrary to Sec. 21 of the Regulations	Near Valhalla Island, Long Lake	Fined \$1.00 or 7 days in jail.
9	Bill Lozinsky.....	Having in possession pike contrary to Sec. 29 of F. R. Regs.	Sec. 7, Tp. 29, Rge. 4, W. 2nd Mer.	Fined \$20.00 or 30 days in jail, and had confiscated 1 pike partly cooked.
10	Gus Ivers.....	Having in possession pike contrary to Sec. 29 of the Fishery Regs.	Sec. 25, Tp. 33, Rge. 12, W. of 2nd Mer.	Fined \$4.00 and costs and had conf. from him 1 pike.
11	W. Lackmaull.....	Having in possession pike contrary to Sec. 29 of the Fishery Regs.	Sec. 12, Tp. 29, Rge. 5, W. of 2nd Mer.	Fined \$10.00 and costs and conf. from him 1 pike.
12	M. Spichen.....	Having in possession pike contrary to Sec. 29 of the Fishery Regs.	Sec. 6, Tp. 29, Rge. 4, W. of 2nd Mer.	Fined \$10.00 and costs and had conf. from him 1 pickerel.
13	Mike Secundiak.....	Having in possession 1 pike, 1 pickerel, contrary to Sec. 29, Fish. Regs.	Sec. 34, Tp. 30, Rge. 6, W. of 2nd Mer.	Fined \$5.00 and costs and conf. from him 1 pike.
14	Jan Koawetz.....	Having in his possession pike contrary to Sec. 29, F. Regs.	Sec. 24, Tp. 30, Rge. 6, W. of 2nd Mer.	Fined \$5.00 and costs.
15	Metro Secundiak.....	Having pickerel in his possession contrary to Sec. 29, Fish. Regs.	Sec. 24, Tp. 30, Rge. 6, W. of 2nd Mer.	Fined \$5.00 and costs.
16	Steve Krawetz.....	Having in his possession pike contrary to Sec. 29 of the Fish. Regs.	Sec. 24, Tp. 30, Rge. 6, W. of 2nd Mer.	Fined \$1.00 and costs.
17	Henry Yeak.....	Using dip-net without license contrary to Sec. 1, Fish. Regs.	Souris River, Weyburn.....	Fined \$5.00 and costs and had conf. from him 1 dip-net.
18	Ludwig-Bohn.....	Using dip-net without license contrary to Sec. 1, Fish. Regs.	Souris River, Weyburn.....	Fined \$5.00 and costs and had conf. from him 1 dip-net.
19	Chas. Shoulak.....	Using dip-net without license contrary to Sec. 1, Fish. Regs.	Souris River, Weyburn.....	Fined \$5.00 and costs and had conf. from him 1 dip-net.
20	Stephen Kohot.....	Using dip-net without license contrary to Sec. 1, Fish. Regs.	Souris River, Weyburn.....	Fined \$5.00 and costs and had conf. from him 1 dip-net.
21	Albert Dow.....	Fishing in closed season contrary to Sec. 21 of the Fish. Regs.	Souris River, Weyburn.....	Fined \$3.00 and had conf. from him 10 lbs. pickerel.
22	Geo. Reddick.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Near Regina Beach.....	Fined \$3.00.
23	H. Hildson.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Regina-Beach.....	Fined \$3.00.
24	B. Robertson.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Regina-Beach.....	Fined \$3.00.
25	B. H. Wilson.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Regina-Beach.....	Fined \$2.00 and costs.
26	Wm. Stephens.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Swift Current Creek.....	Fined \$5.00 and costs.
27	Joe English.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Swift Current Creek.....	Fined \$10.00 and costs.
28	James Wood.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Swift Current Creek.....	Fined \$10.00 and costs.



29	Joe Gorry.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Swift Current Creek.....	Fined \$5.00 and costs.
30	Ben Princeston.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Long Lake near Vale-port.....	Fined \$10.00 and costs.
31	Geo. Barre or Joe Barr.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Long Lake near Vale-port.....	Fined \$10.00 and costs.
32	Joe Moist or Most.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Long Lake near Vale-port.....	Fined \$10.00 and costs.
33	Joe Zerr.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Long Lake near Vale-port.....	Fined \$10.00 and costs.
34	J. Wood.....	Fishing in closed season, contrary to Sec. 21 of the Fish. Regs.	Long Lake near Vale-port.....	Fined \$10.00 and costs.
35	Alex Lemaire.....	Fishing with nets of less mesh than 5½" stretched measure, cont. to Sec. 17 of the Spec. Regs.	Lac Pelletier.....	Fined \$10.00 and costs.
36	Alex Lemaire.....	Permitting nets not numbered, nor marked, contrary to Sec. 15 of the Spec. Fish. Regs.	Lac Pelletier.....	Fined \$10.00 and costs and had conf. from him 1-20 ft Seine net and 20 lbs. whitefish, 2 lbs. of pike.
37	David Klassen.....	Fishing with illegal apparatus viz.: wire traps, contrary to Sec. 27 of the Spec. Fish. Regs.	Swift Current Creek.....	Fined \$2.00 and costs and had conf. from him 50 yds. gill-net.
38	Addie Klassen.....	Fishing with illegal apparatus viz.: wire traps, contrary to Sec. 27 of the Spec. Fish. Regs.	Swift Current Creek.....	Fined \$5.00 and costs and conf. from him 1 box of wire traps.
39	Jack Friesen.....	Fishing with illegal apparatus viz.: wire traps, contrary to Sec. 27 of the Spec. Fish. Regs.	Swift Current Creek.....	Fined \$5.00 and costs and conf. from him 1 box of wire traps.
40	Henry Poitras.....	Using snare contrary to Sec. 27, Fish Regs.	Katepwe Dam, N.W. ¼ Sec. 27, Tp. 19, Rge. 12, W. of 2nd Mer.	Fined \$1.00 and costs and had conf. 1 snare.
41	F. M. Grier.....	Using illegal mesh net, contrary to Sub-Sec. 1 of Sec. 11, Fish Regs.	Round Lake.....	Fined \$5.00 and costs and had conf. 1 gill-net.
42	Matti Stom.....	Having in possession fish contrary to Sec. 29, Fish Regs.	Percival, Tp. 24, Sec. 16, Rge. 4, W. of 2nd Mer.	Fined \$20.00 and cost and had conf. 7 gill-nets and 150 lbs. tullibee.
43	Roger Nabiss.....	Failing to number net as required, Sec. 3, Fish Regs.	Pasqua Lake.....	Fined \$1.00 and costs and had conf. 25 lbs. tullibee, 1 gill-net.
44	Pegan.....	Using illegal mesh net contrary to sub-sec. 1 of Sec. 11.	Pasqua Lake.....	Fined \$1.00 and costs and had conf from him 5 yds. gill-net.
45	Alex Keynotch.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Whitefish Lake.....	Fined 50c. and costs.
46	George Stewart.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Whitefish Lake.....	Fined 50c. and costs.
47	Geo. Morin.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Whitefish Lake.....	Fined 50c. and costs.
48	Thomas Whitefish.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Whitefish Lake.....	Fined 50c. and costs.
49	Ernest Joseph.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Long Lake.....	Fined 50c. and costs.
50	Buster Bear.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Long Lake.....	Fined 50c. and costs.
51	Geo. Whitefish.....	Fishing without license or permit contrary to Sec. 2, Para 1 of the Regs.	Long Lake.....	Fined 50c. and costs.
52	Thor Johnson.....	Fishing during close season.....	Ile a la Crosse Lake.....	Fined \$50 and had con. from him 220 lbs. whitefish and 180 lbs. pike, and 3 gill-nets.

## RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—Continued

ALBERTA—Inspector R. T. RORD

Pro- No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
1	Rosedale Mining Co.	Pollution of a stream by permitting mine refuse to enter.	The Red Deer River.	Fined \$10.00 and costs.
2	Star Mining Co.	Pollution of a stream by permitting mine refuse to enter.	The Red Deer River.	Fined \$10.00 and costs.
3	Edward Clark.	Fishing without a license.	Lesser Slave Lake.	Fined \$15.00.
4	Frederick Bordynuk.	Fishing in the close season with a net of illegal mesh.	Red Deer River, near New- castle.	Fined \$5.00 and costs and had conf. from him 1 gill-net.
5	Paul Kwiczak.	Fishing in the close season with a net of illegal mesh.	Red Deer River, near New- castle.	Fined \$5.00 and costs and had conf. from him 1 gill-net.
6	Steve Serna.	Fishing without license.	Jackfish Lake, near Bellis.	Fined \$3.00.
7	Pete Warawuk.	Fishing without license.	Jackfish Lake, near Bellis.	Fined \$3.00.
8	Frederick Pekes.	Fishing with a net in prohibited waters without a license.	Burntwood Lake.	Fined \$25.00 and costs and had conf. from him 1 gill-net.
9	Cuddy Lumber Co.	Depositing sawdust and mill rubbish.	Athabasca River.	Fined \$10.00 and costs.
10	Lars Peterson.	Fishing with light contrary to Sec. 29, F. R.	Sylvan Lake.	Fined \$1.00 and costs.
11	John Smith.	Fishing with light contrary to Sec. 29, F. R.	Sylvan Lake.	Fined \$1.00 and costs.
12	Alfred Gulbe.	Fishing with a net in prohibited waters without a license.	Burntwood Lake.	Fined \$10.00 and costs, had conf. from him 1 gill-net.
13	Rudolph Pekse.	Fishing with a net in prohibited waters without a license.	Burntwood Lake.	Suspended sentence on payment of cost of court by del.
14	W. A. Vaughn.	Having trout under 9" contrary to Sec. 34, Sp. Fish. Regs.	South Fork off Old Man River	Fined \$10.00 and costs and had conf. 1 greenheart rod, 7 rainbow trout.
15	Union Packing Co.	Pollution of stream by putting manure from the yard into it.	Nose Creek near Calgary.	Fined \$20.00 and costs.
16	R. A. McIvor.	Killing fish under the legal size.	Elbow River near Bragg Creek	Fined \$5.00. Had conf. from him 1 fishing rod.
17	J. Lottus.	Using net contrary to Sec. 1, Fish. Regs.	Belly River, Lethbridge.	Fined \$2.00 and costs and had conf. from him 1 net and 6 coarse fish.
18	M. Swedish.	Using net contrary to Sec. 1, Fish. Regs.	Belly River, Lethbridge.	Fined \$2.00 and costs and had conf. from him 1 net and 6 coarse fish.
19	Edgar Duckett.	Fishing with small mesh net contrary to Para. 1, Sec. 11 of Spec. Fish. Reg.	Moose Lake.	Fined \$5.00 and costs and had conf. from him 3 nets.
20	Ivan McNeil.	Fishing with small mesh nets contrary to Para. 1, Sec. 11, Spec. Fish. Regs.	Moose Lake.	Fined \$5.00 and costs and had conf. 1 gill-net.
21	Wm. Hislop.	Fishing with small mesh nets contrary to Para. 1, Sec. 11 Spec. Fish. Regs.	Moose Lake.	Fined \$5.00 and costs and had conf. 1 gill-net.
22	F. B. Shepersky.	Assisting angler to fish without permit contrary to Sec. 32 (a) Spec. Regs.	Cold Lake.	Fined \$5.00 and costs and had conf. 1 gill-net.
23	B. Salander.	Fishing without angling permit.	Cold Lake.	Fined \$10.00 and costs.

24	R. Chartier.....	Selling fish under Domestic Lic. contrary to Sec. 2, Para. 8 (b).....	Cold Lake.....	Case dismissed.
25	O. J. Woods.....	Angling without permit contrary to Sec. 1—A. Fish. Regs. ....	Beaver Creek near Spring Point.....	Fined \$5.00 and costs and had conf. from him 15 trout.
26	Fred Perkins.....	Having undersized trout contrary to Sec. 2 A. Fish. Regs. ....	Beaver Creek near Spring Point.....	Fined \$5.00 and cost. and had conf. from him 13 small trout and 11 over 9" costs. Suspended sentence condition he leaves place.
27	Joseph Elliot.....	Angling in a closed stream.....	Pekisko Creek.....	Fined \$50.00 and costs. Suspended sentence condition he leaves place.
28	Jack Miller.....	Fishing in a closed lake contrary to Sub-sec. 9 of Sec. 14, Spec. Regs. ....	Cottage Lake.....	Fined \$5.00 and costs.
29	J. Whiteley.....	Killing fish under legal size.....	Elbow River, near Pirmez Creek.....	Fined \$3.00 and confiscation of 1 fishing rod and tackle.
30	Alvin O. Rich.....	Angling without a permit contrary to Sec. 1, para. (b) of Alta. Regs. ....	Belly River, near Hillspring.....	Fined \$5.00 and costs and confiscation of 1 rod and leader.
31	John Bodik.....	Using a net for coarse fish with 2½-inch mesh net contrary to Sec. 11, para. 3, Spec. Fish. Regs. ....	Lethbridge.....	Had confiscated from him 1 net and costs of court.
32	Edward Campbell.....	Angling without a permit, contrary to Sec. 32 of Spec. Fish. Regs. ....	Belly River, Hillspring.....	Fined \$5.00 and costs and had confiscated from him 1 binder whip used as rod.
33	Fay W. Liddle.....	Angling without a permit, contrary to Sec. 32 of Spec. Fish. Regs. ....	Belly River, Hillspring.....	Fined \$5.00 and costs and had confiscated from him 1 rod.
34	Edwin Smith.....	Angling without a permit, contrary to Sec. 32 of Spec. Fish. Regs. ....	Belly River, Hillspring.....	Fined \$5.00 and costs and had confiscated from him 3-jointed steel rod.
35	Louis Lavelle.....	Fishing in close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
36	Geo. Bourque.....	Fishing in close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
37	Sylvestre Bourque.....	Fishing in close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
38	Louis Bouvier.....	Fishing in close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 3 gill-nets. Returned to defendant.
39	Alphonse Bourque.....	Fishing in close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 3 gill-nets. Returned to defendant.
40	Narcisse Ladouceur.....	Fishing during close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
41	Arthur Huppé.....	Fishing during close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
42	R. Trombly.....	Fishing during close season.....	Lac La Biche.....	Not guilty. Had confiscated from him 2 gill-nets. Returned to defendant.
43	Elie Cruse.....	Angling without permit contrary to Sec. 1 (b) Fish. Regs. ....	Carpenter Creek, near Twin Butte.....	Not guilty. Had confiscated from him 3 gill-nets. Returned to defendant.
44	Geo. Jones.....	Angling without permit contrary to Sec. 32 (a) of Fish. Regs. ....	Big Bend—Belly River, near Hillspring. Lake.....	Fined \$5.00 and costs. Had confiscated from him 1 willow pole and hook.
45	A. Brillian.....	Having illegal gill-net.....	Lesser Slave Lake.....	Fined \$5.00 and costs and had confiscated from him 1 bamboo pole.
46	Pat McDermott.....	Fishing with 3 illegal gill-nets.....	Narrows, Lesser Slave Lake, Swan River.....	Fined \$20.00 or 21 days in jail. Had confiscated from him 3 gill-nets.
47	C. R. McKenzie.....	Fishing with illegal gill-nets.....	Lesser Slave Lake.....	Fined \$20.00, no costs, one month in jail. Had confiscated from him 3 gill-nets. Fined \$20.00 or one month in jail and had confiscated from him 103 pounds of fish.



## RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—Continued

ALBERTA—Continued

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
48	J. Brillon.....	Fishing without a license.....	White Fish River.....	Fined \$25.00 and had confiscated from him fish and nets.
49	J. Brillon.....	Fishing in closed season.....	White Fish River.....	Fined \$25.00 and had confiscated from him fish and nets.
50	J. Brillon.....	Obstructing Mink Creek with wire-netting.....	Mink Creek, White Fish Lake No. 2.....	Fined \$35.00 and costs and had confiscated from him fish and nets.
51	Pat McDermott.....	Fishing in closed season.....	Whitefish River.....	Fined \$25.00.
52	Pat McDermott.....	Fishing without a license.....	Whitefish River.....	Fined \$25.00 and costs.
53	Frank O. Letie.....	Fishing in closed season.....	Mink Creek.....	Fined \$20.00.
54	Frank O. Letie.....	Fishing without a license.....	Mink Creek.....	Fined \$20.00 and costs.
55	Joe McDermott.....	Fishing in closed season.....	Whitefish River.....	Fined \$20.00.
56	Joe McDermott.....	Fishing without a license.....	Whitefish River.....	Fined \$20.00 and costs.
57	David Bottle.....	Fishing in closed season.....	Mink Creek.....	Fined \$20.00 and costs.
58	Peter Shaw.....	Fishing without a license.....	Mink River.....	Fined \$20.00 and costs.
59	Peter Shaw.....	Fishing in closed season.....	Mink River.....	Fined \$20.00.
60	T. Randell.....	Fishing in closed season.....	Big Whitefish Lake.....	Fined \$20.00 and had confiscated from him 1 gill-net.
61	The Rosedeer Mine.....	Pollution of stream by permitting mine refuse to enter.....	Rosebud Creek, Wayne.....	Fined \$20.00 (reduced to \$5.00) and costs.
62	Superior Grade Coal Co.....	Pollution of stream by permitting mine refuse to enter.....	Rosebud Creek, Wayne.....	Fined \$40.00 (reduced to \$1.00) and costs.
63	The Sovereign Coal Mining Co.....	Pollution of stream by permitting mine refuse to enter.....	Rosebud Creek, Wayne.....	Fined \$20.00 (reduced to \$1.00) and costs.
64	The Ideal Mine.....	Pollution of stream by permitting mine refuse to enter.....	Rosebud Creek, Wayne.....	Fined \$20.00 (reduced to \$1.00) and costs.
65	J. Bellrose, Jr.....	Fishing with illegal net.....	Snipe Lake.....	Fined \$10.00 and confiscated from him 7 gill-nets.
66	Frank Murphy.....	Fishing with illegal size mesh net.....	Lac La Biche.....	Fined \$10.00 and costs and had confiscated 1 gill-net.

BRITISH COLUMBIA—Chief Inspector Major J. A. MOTHERWELL  
DISTRICT No. 1—Inspector A. P. HALIDAY

1	H. Hewett.....	Fishing in closed areas.....	Campbell River.....	Fined \$2.50 and costs.
2	H. Hansen.....	Assisting in salmon gill-net fishing without having a license.....	Fraser River.....	Fined \$15 and costs.
3	J. C. Taylor.....	Fishing in closed areas—Little Pinantan Lake.....	Little Pinantan Lake.....	Fined \$5.
4	J. C. Taylor.....	Fishing in closed areas—Little Pinantan Lake.....	Little Pinantan Lake.....	Fined \$5.

5	J. F. Mobley.....	Fishing in closed areas—Little Pinantan Lake.....	Little Pinantan Lake.....	Fined \$5.
4A	Nick Zavagali.....	Catching trout under 8 inches in size.....	McKay Creek.....	Fined \$10 and costs
5A	G. Broder.....	Fishing in that portion of Capilano River known as The Pool.....	Capilano River.....	Fined \$5 and costs.
6	George Canary.....	(1) Capturing more trout in one day than allowed by law.	Trout Lake.....	Fined \$25 and costs.
		(2) Capturing and having in possession, trout under 8 inches in length.	Trout Lake.....	Fined \$10 and costs.
6A	Lum (Chinese).....	Having undersized crabs in possession.....	Vancouver.....	Fined \$25 and costs.
7	T. Ferada.....	Having in possession undersized sturgeon.....	New Westminster.....	Fined \$5.
8	Mike Ludwig.....	Spearing salmon.....	Salmon River, near Silver Creek.....	Fined \$2 and costs.
9	Irving J. Wilson.....	Spearing salmon.....	Salmon River, near Silver Creek.....	Fined \$2 and costs.
10	W. Cameron.....	Spearing salmon.....	Nicola River.....	Fined \$10. Spear and wire snare confiscated.
11	C. Ardure.....	Taking trout less than 8 inches in length and not returning same to water.	Six Mile Lake.....	Fined \$10 and fishing gear confiscated.
11A	R. Goodwin.....	Non-resident fishing without permit.....	Capilano River.....	Fined \$2.50 and costs.
12	T. Deferro.....	Taking trout less than 8 inches in length and not returning same to water.	Six Mile Lakes.....	Fined \$10 and fishing gear confiscated.
12A	R. Wight.....	Using salmon roe while fishing in Capilano River.....	Capilano River.....	Fined \$2.50 and costs.
13	Wm. Kennedy.....	Taking trout less than 8" in length and not returning same to water.	Six Mile Lakes.....	Fined \$10.00 and fishing gear confiscated.
13A	S. B. Johnson.....	Taking and killing more than 25 trout in one day.....	Capilano River.....	Fined \$1 and costs.
14	O. Shigemoto.....	Capturing and having in possession undersized sturgeon.	Fraser River, New Westminster.....	Fined \$1 and costs. Two small sturgeon confiscated.
14A	S. B. Johnson.....	Catching trout under 8" in length and not returning same to water.	Capilano River.....	Fined \$15.00 and costs. Fishing gear confiscated.
15	M. W. Regan.....	Fishing in closed area—Nicomekl River.....	Nicomekl River.....	Guilty. No fine.
16	W. S. Perkins.....	Fishing in closed area—Nicomekl River.....	Nicomekl River.....	Guilty. No fine.
17	Wong Fong.....	Having in possession undersized sturgeon.....	New Westminster.....	Fined \$10.00 and costs.
18	S. Kawade.....	Having in possession undersized sturgeon.....	Fraser Mills.....	Fined \$10.00 and costs. Rod and line confiscated.
15A	George Grundy.....	Operating gill-net without licenses.....	Burrard Inlet.....	Fined \$5.00 and costs.
16A	Edway Snider.....	Operating gill-net within 200 yards of mouth of Seymour River.....	Seymour River.....	Fined \$25.00 and costs. Boat and net confiscated.
17A	Edway Snider.....	Operating gill-net without license.....	Seymour River.....	Fined \$25.00 and costs.
19	Thos. Moen.....	Fishing during weekly closed season.....	Fraser River.....	Fined \$15.00 and costs. Boat and gear confiscated.
20	Pete Hawfreshen.....	Catching Kokanee on their spawning grounds.....	Nine Mile Creek, West Arm.....	Fined \$10.00 and costs.
21	Joseph Biolkowski.....	Catching Kokanee on their spawning grounds.....	Kootenay.....	Fined \$5.00 and costs.
22	W. J. Brown.....	Illegally fishing for Kokanee—see Sec. 21, subsection 20.	Nine Mile Creek, West Arm.....	Fined \$10.00 and costs. Gaff and dipnet confiscated.
23	J. Robinson.....	Illegally fishing for Kokanee, see sec. 21, subsection 20, Fishery Regulations.	Chute Creek.....	Fined \$1.00 and costs.
24	Ernes Roper.....	Sharing salmon.....	Trepanier Creek.....	Fined \$10.00 and costs.
			Campbell River dam.....	

RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—*Continued*  
 BRITISH COLUMBIA—DISTRICT No. 1—*Concluded*

Pros. No.	Name of Offender	Name of Offence	Place of Offence	Result of Prosecution
25	Carl Lashey.....	Stoning salmon.....	Campbell River dam.....	Fined \$10.00 and costs.
26	Geo. Fillenger.....	Attempting to gaff salmon.....	Campbell River.....	Fined \$10.00 and costs.
27	G. Yamamoto.....	Fishing in closed areas.....	Silver Creek.....	Fined \$10.00 and costs.
27 A	J. Gunderson.....	Fishing for salmon with oversized net.....	Howe Sound.....	Fined \$25.00 and costs.
28	Jimmy Charles (Indian).....	Selling fish caught under permit for food purposes only.....	White Rock.....	Fined \$15.00 and costs. Salmon confiscated.
29	Vancouver Shell Fish Co.....	Buying salmon from an Indian in contravention of Section 15.....	Vancouver.....	Case dismissed. Salmon confiscated.
29 A	P. Anderson.....	Having in possession shellfish prohibited by law.....	Barnet.....	Fined \$25.00 and cost of court.
30	John Hegeman.....	Having in possession trout during close season.....	Fish Lake.....	Fined \$25.00 and costs of court and confiscation of small keg containing 10 trout.

## DISTRICT No. 2.—Inspector A. MACKIE

1	Leo Goldfish.....	Fishing for salmon with set net.....	Skeena River.....	Fined \$30.00.
2	Roy Herman.....	Fishing for salmon with set net.....	Skeena River.....	Fined \$30.00.
3	Paul Benson.....	Fishing for salmon with set net.....	Skeena River.....	Fined \$30.00.
4	Yejo J. Kaakinen.....	Fishing with gill-net above commercial boundary.....	Skeena River.....	Fined \$5.00.
5	Palo, Vaino.....	Fishing with gill-net above commercial boundary.....	Skeena River.....	Fined \$10.00.
6	Mankichi Teramoto.....	Fishing in weekly closed time.....	Skeena River.....	Fined \$15.00.
7	H. Sigurdson.....	Fishing in weekly closed time.....	Skeena River.....	Fined \$10.00.
8	Tani Shazo.....	Fishing without license.....	Skeena River.....	Fined \$15.00.
9	Heibel Kitagawa.....	Carrying greater length of net than allowed by law.....	Skeena River.....	Fined \$10.00 and 70 fath. net confiscated.
10	Mansuke Fujimoto.....	Fishing with 3½ mesh net before season opened.....	Skeena River.....	Fined \$25.00.
11	Montoro Okano.....	Fishing during weekly closed season.....	Naas River.....	Fined \$10.00.
12	Gilbert Martin.....	Fishing during weekly closed season.....	Naas River.....	Fined \$10.00.
13	O. Aune.....	Fishing with set net.....	Labouchere Channel.....	Fined \$25.00 and costs.
14	H. Caspersen.....	Fishing with set net.....	Labouchere Channel.....	Fined \$25.00 and costs.
15	F. Gerlang.....	Fishing with set net.....	Labouchere Channel.....	Fined \$25.00 and costs.
16	E. Iversen.....	Fishing with set net.....	Labouchere Channel.....	Fined \$25.00 and costs.
17	Geo. Sheaves.....	Fishing with set net.....	S. Bentinck Arm.....	Dismissed.
18	T. Hamada.....	Fishing for salmon with a net without a license.....	Chatham Sound.....	Fined \$150.00 and costs. Fishing gear confiscated.
19	Y. Takiki.....	Fishing for salmon with a net without a license.....	Skeena River.....	Fined \$150.00 and costs. Fishing gear confiscated.
20	S. Kano.....	Fishing for salmon with a net without a license.....	Skeena River.....	Fined \$150.00 and costs.
21	U. Stushikura.....	Fishing for salmon with a net without a license.....	Chatham Sound.....	Fined \$150.00 and costs.
22	W. R. Campbell.....	Fishing for salmon with seine less than 125 fathoms in length.....	Shwadians.....	Fined \$25.00 and costs.
23	D. Suzuki.....	Carrying a greater length of net than allowed by license.....	Chatham Sound.....	Fined \$150.00 and costs. 97 fathoms net confiscated.



24	James Duffy.....	Fishing with gill-net exceeding 200 fathoms.	Smiths Inlet.....	Fined \$100.00.
25	R. MacLeod.....	Fishing with gill-net exceeding 200 fathoms.	Smiths Inlet.....	Fined \$100.00.
26	Karasuke Kariya.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
27	Yosokichi Sokuzawa.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
28	Denjiro Takenaka.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
29	Kojiro Shoji.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
30	T. Omura.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
31	Okuzo Tsujibata.....	Not carrying license on boat while fishing.	Naas River.....	Fined \$5.00.
32	Otomatsu Fujimoto.....	Not carrying license while fishing.	Naas River.....	Fined \$5.00.
33	Kuichi Shirakawa.....	Not carrying license while fishing.	Naas River.....	Fined \$5.00.
34	Yasuki Shimahara.....	Using purse-seine as set net.....	Black Point, Warke Canal.....	Case dismissed.
35	Ole Skog.....	Trolling for salmon without a license.	Tide Rip Island.....	Fined \$10.00.
36	C. F. Johnstone.....	Fishing for salmon with long net.....	Koeye River.....	Fined \$50.00; 25-fathom net confiscated.
37	James Patience.....	Fishing for salmon during weekly closed season.	Fitzhugh Sound.....	Fined \$25.00.
38	P. Jerome.....	Fishing for salmon during weekly closed season.	Smiths Inlet.....	Fined \$25.00.
39	John Penny.....	Fishing for salmon during weekly closed season.	Rivers Inlet.....	Fined \$10.00.
40	Fred Barbour.....	Fishing for salmon during weekly closed season.	Smiths Inlet.....	Fined \$10.00.
41	A. Sweetable.....	Fishing for salmon during weekly closed season.	Smiths Inlet.....	Fined \$100.00.
42	Hans Ottesen.....	Having salmon net tied to that of H. Baardsen.	Smiths Inlet.....	Fined \$100.00.
43	Helmar Baardsen.....	Fishing with salmon gill-net tied to that of H. Ottesen.	Smiths Inlet.....	Fined \$10.00.
44	J. George.....	Fishing with salmon gill-net during weekly closed season.	Smiths Inlet.....	Fined \$10.00.
45	W. Proctor.....	Allowed part of salmon net inside boundaries.	Quashella Creek.....	Fined \$25.00.
46	Elmar Martinson.....	Allowed part of salmon net inside boundaries.	Quashella Creek.....	Fined \$25.00.
47	Harry McKay.....	(Gill-netting salmon during weekly closed season.	Smiths Inlet.....	Fined \$20.00.
48	J. Skjeggstad.....	Allowed part of salmon net inside boundaries.	Quashella Creek.....	Fined \$10.00.
49	J. B. Inversen.....	Carrying in his boat a greater length of net than allowed by his license.	Chatham Sound.....	Fined \$25.00 and costs; 47-fathom net confiscated.
50	Rinsø Minato.....	Carrying in his boat a greater length of net than allowed by his license.	Chatham Sound.....	Fined \$25.00 and costs.
51	Christian Finarson.....	Fishing for salmon with set net.....	Skeena River.....	Fined \$30.00 and costs.
52	W. J. Walker.....	Fishing for salmon during weekly closed season.	Skeena River.....	Fined \$15.00 and costs.
53	R. J. Duval.....	Fishing for salmon with long net.	Chatham Sound.....	Fined \$25.00 and costs.
54	Roger Mallory.....	Fishing for salmon with long net.	Chatham Sound.....	Fined \$25.00 and costs.
55	Keikichi Izumi.....	Fishing for salmon with long net.	Chatham Sound.....	Fined \$25.00 and costs.
56	Ole Osberg.....	Fishing for salmon during weekly closed season.	Chatham Sound.....	Prosecution withdrawn.
57	Arthur Johnson.....	Fishing for salmon during weekly closed season.	Chatham Sound.....	Dismissed.
58	Rinsø Minato.....	Fishing for salmon during weekly closed season.	Chatham Sound.....	Dismissed.
59	Kunekiichi Ito.....	Fishing for salmon during weekly closed season.	Chatham Sound.....	Dismissed.
60	Keikichi Izumi.....	Casting net a few minutes before 6 p.m. Sunday.	Chatham Sound.....	Dismissed.
61	Southern Freighters, Ltd.....	Fishing above tidal boundaries.	Khutzymateen Inlet.....	Dismissed.
62	B. C. Fish & Packing Co., Ltd.....	Fishing above tidal boundaries.	Steep Point Bay, Laredo Sound.....	Dismissed.
63	Chris Morsund.....	Fishing above tidal boundaries.	Steep Point Bay, Laredo Sound.....	Dismissed.
64	Ernest Broch.....	Salmon gill-net tied to beach.	Quashella Creek.....	Fined \$50.00.
65	A. Backe.....	Fishing with salmon gill-net above boundaries.	Rivers Inlet.....	Fined \$50.00 and net confiscated.
66	Jacobson.....	Fishing with salmon gill-net above boundaries.	Rivers Inlet.....	Fined \$50.00. Unable to pay. Two months in gaol.
67	Jacobson.....	Willfully resisting fishery officer in execution of duties.	Rivers Inlet.....	Fined \$100.00. Unable to pay. Four months in gaol.

RETURN showing the Details of Prosecutions for Offences against the Fisheries Act during the Fiscal Year 1927-28—*Concluded*  
 BRITISH COLUMBIA—DISTRICT NO. 2—*Concluded*

Pros. No.	Name of Offender	Nature of Offence	Place of Offence	Result of Prosecution
68	E. Samson.....	Fishing for salmon with grill-net when such fishing prohibited.	Bay near Tracy, Is. Portland Inlet.	Fined \$25.00 and fishing gear confiscated.
69	One Nakamura.....	Fishing during weekly closed period.	Naaas River.....	Fined \$5.00.
70	Yasugito Oliguchi.....	Fishing during weekly closed period.	Naaas River.....	Fined \$5.00.
71	Tachii Machida.....	Fishing during weekly closed period.	Naaas River.....	Fined \$5.00.
72	Ed. Stanley.....	Removing fresh salmon from above tidal boundary.	Naaas River.....	Dismissed.
73	Ben Self.....	Fishing for salmon without a license.	Rawlanson Anchor.....	Fined \$25.00 and 40-fathom net confiscated.
74	John Erickson.....	Fishing during weekly closed season.	Rivers Inlet.....	Fined \$25.00.
75	Gosse Packing Co.....	Fishing within boundary, Cliffe Harbor.....	Dean Channel.....	Fined \$200.00 and costs.
76	Canadian Fishing Co.....	Fishing within boundary, Elcho River.....	Dean Channel.....	Fined \$200.00 and costs.
77	Isaac Sankey.....	Bringing fresh salmon below tidal boundary.	Khutzymateen Inlet.....	Dismissed.
78	David Hayward.....	Bringing fresh salmon below tidal boundary.	Khutzymateen Inlet.....	Dismissed.
79	Charles M. Ryan.....	Bringing fresh salmon below tidal boundary.	Khutzymateen Inlet.....	Dismissed.
80	Luke Car.....	Found with seine-purse in prohibited area.	Goose Bay, Selwyn Inlet.....	Dismissed.
81	B.C. Fishing & Packing Co., Ltd.	Illegal possession of salmon.	Walker Lake Cy.....	Dismissed.
82-100	Gosse Packing Co., Ltd.	Fishing during closed period.	Salmon Bay.....	Dismissed.
101	Gosse Packing Co., Ltd.	Illegal possession of salmon.	Namu Cannery.....	Dismissed.
102	Gosse Packing Co., Ltd.	Illegal possession of salmon.	Bella Bella Cy.....	Dismissed.
103\122\	B.C. Fishing & Packing Co., Ltd.	Fishing during closed period.	District No. 2.....	Dismissed.
123	Ben Self.....	Fishing for salmon without a license.	Rawlanson Anchor.....	Appeal allowed and fine returned.
124	John Wick.....	Fishing for salmon without a license.	Rawlanson Anchor.....	Fined \$50.00 and \$100.00 costs.
125	Silas Brown.....	Selling salmon above a tidal boundary.	Kitwanga.....	Fined \$15.00 and costs.

BRITISH COLUMBIA—DISTRICT No. 3—Inspector A. J. TAYLOR

1	Alex Hulkanem.....	Contravention of Sec. 21 (2).....	Cowichan River.....	Fined \$5.00.
2	C. Koyavage.....	Contravention of Sec. 21 (2).....	Cowichan River.....	Fined \$5.00 and costs.
3	Tommy Paul.....	Contravention of Sec. 21 k (1).....	Saanich Arm.....	Fined \$15 and costs.
4	Chief Peter Dieck and Willie Jack	Contravention of Sec. 21 (q).....	Chee-what River.....	Fined \$1.00 in each case, salmon conf.
5	Russell Hetzler.....	Contravention of sec. 6 (b).....	Stuart Island.....	Fined \$25.00.
6	Eric Wickham.....	Contravention of sec. 21.....	Nitinat Arm.....	Fined \$15 and costs.
7	Dan Woodward.....	Contravention of Sec. 2 (a) Reg. and Sec. 50 of Act.....	Nitinat Arm.....	Fined \$5.00 and \$1.00 costs.
8	Alfred Johnson.....	Contravention of Sec. 21, subsec. 17.....	Saichenau Creek.....	Fined \$50.00.
9	Harry Moon.....	Contravention of Sec. 15, subsec. 1 (a).....	Hayden Bay.....	Dismissed.
10	Josiah Russell.....	Contravention of Sec. 21, Subsec. 17.....	Saichenau Creek.....	Fined \$25 and costs.
11	A. Martinolich.....	Contravention of Sec. 21, subsec. 19.....	Uchuckleit Harbour.....	Fined \$175 and costs.
12	Ole Lee.....	Contravention of Sec. 24, Subsec. 2 (B).....	Saichenau Creek.....	Fined \$25 and costs.
13	John Salo.....	Contravention of Sec. 22, 7.....	Wakeman Sound.....	Fined \$100.00.

14	Victor Ferrario.....	Contravention of Sec. 15, Subsec. 1a.....	Salmon River.....	Fined \$100.00.
15	Martin Arnet.....	Contravention of Sec. 21, Subsec. 17 (a).....	Sarita River.....	Fined \$200 and costs, license cancelled.
16	R. E. B. Hunt and F. Duffy.....	Contravention of Sec. 21.....	Nahwitti River.....	Dismissed.
17	Gilbert Francis.....	Contravention of Sec. 21, subsec. 17 (a).....	Homalka River.....	Fined \$50.
18	Frederick Bruce Spicher.....	Contravention of Sec. 15, Subsec. 4 and Sec. 29, Subsec. 1.....	MacKenzie Sound.....	Dismissed, 321 salmon confiscated.
19	Dan Watts.....	Contravention Sec. 2, para B. of sec. 24.....	Barley Sound.....	Fined \$25 and costs, 85 salmon conf.
20	Fred Kline.....	Contravention of sec. 24, 2b.....	Pender Harbour.....	Fined \$20.00.
21	Dave Paul.....	Contravention of sec. 21, subsec. 17 (a).....	Orford Bay.....	Fined \$50 and costs.
22	Victor Ferrario.....	Contravention of sec. 21, subsec. 19.....	Port Neville.....	Dismissed.
23	Tahsis Packing Co., Ltd.....	Contravention of sec. 24, para. 4 (a) and (d).....	Nootka Sound.....	Fined \$25.00 on each charge, purse-seine and salmon confiscated.
24	Michael Brown.....	Contravention of Sec. 21, subsec. 17 (a).....	Coleman Creek.....	Dismissed.
25	Ernest Silvey.....	Contravention of Sec. 21, Subsec. 17 (a).....	Jervis Inlet.....	Fined \$60 and costs, license cancelled.
26	R. Tabata & Co.....	Contravention of Order in Council, July 24, 1922, P.C. 1552 (Fish Curing).....	Jesse Island.....	Fined \$100 and costs.
27	Ralph Birdwhistle.....	Contravention of Sec. 21, Subsec. 21, Fish Regs.....	Victoria, B.C.....	Fined \$10.00 and costs. Conf. cod and salmon.
28	North West Fisheries, Davies Island Plant.....	Contravention of para. 7 and 3 Order in Council of July 24, 1922, P.C. 1552.....	Davis Island.....	Fined \$15.00 and \$5.00 and costs.
29	Harry Marsden.....	Contravention of Sec. 21, Subsec. 2 and Sec. 29, Subsec. 1.....	Deep Water Bay.....	Fined \$25.00 on each count.
30	Thomas Liston.....	Contravention of Sec. 29 of Fish. Act in the vicinity of Nanaimo.....	Nanaimo.....	Fined \$1.00 and license cancelled and conf. of 1 gill net and 3 codfish.
31	Toshigusa Hama.....	Contravention of Sec. 29 of Fish. Act in the vicinity of Nanaimo.....	Nanaimo.....	Fined \$1.00 each and costs.
32	Geo. Reynolds.....	Contravention of Sec. 29 of Fish Act in the vicinity of Nanaimo.....	Nanaimo.....	Fined \$1.00 each and costs.
33	Eugene Philion, Fred Larson, S. Barrow, A. E. Ralf, Chas. E. Stratton, John Johnstone, Ed. Seaplen.....	Contravention of Sec. 2, Sub. sec 1 Fish. Regs.....	Saanich.....	Fined \$1.00 each and costs.
34	Chief Jonny.....	Contravention of Sec. 21, Subsec. 17 (a) Regs.....	Rupert Arm.....	Fined \$25.00.
35	H. J. Stump.....	Contravention of Sec. 24, Subsec. 1 of the Regs.....	Emby Lagoon.....	Fined \$400.00.
36	Botel (Whiskers).....	Contravention of Sec. 24, Subsec. 2 B. of the Regs.....	Ingersoll River.....	Fined \$10.00.
37	Hotel (Whiskers).....	Contravention of Sec. 15, Subsec. 1A, 29, Subsec. 1 and 21 of Subsec. 2.....	Ingersoll River.....	(Case dismissed).
38	John Buema.....	Contravention of Sec. 29, Subsec. 1 and 21, Subsec. 2.....	Pender Harbour.....	Fined \$5.00, \$5.00 and \$2.50 respectively and costs.
39	J. W. Johnstone.....	Contravention of Sec. 29, Subsec. 1 and 21, Subsec. 2.....	Pender Harbour.....	Fined \$5.00 and \$5.00 respectively and costs.
40	George Simpson.....	Contravention of Sec. 15, Subsec. 1a, Sec. 29, Subsec. 1 and 21, Sub. sec. 2.....	Pender Harbour.....	Fined \$5.00, \$5.00 and \$2.50 respectively and costs.
41	Donald Keen.....	Contravention of Sec. 15, Subsec. 1a, Sec. 29, Subsec. 2 and 21, Subsec. 2.....	Pender Harbour.....	Fined \$5.00, \$5.00 and \$2.50 respectively and costs.
42	Maynard Dubois.....	Contravention of Sec. 15, Subsec. 1 A, Sec. 29, Subsec. 1 and 21, Subsec. 2.....	Pender Harbour.....	Fined \$5.00, \$5.00 and \$2.50 respectively and costs.
43	Dalton A. Burt.....	Contravention of Sec. 29, Subsec. 1, Subsec. 2.....	Pender Harbour.....	Fined \$5.00 and \$5.00 respectively and costs.
44	Alex. Thompson.....	Contravention of Sec. 29, Subsec. 1, Subsec. 2.....	Pender Harbour.....	Fined \$5.00 and \$5.00 respectively and costs.
45	Mikal Christianson.....	Contravention of Sec. 29, Subsec. 1, Subsec. 2.....	Pender Harbour.....	Fined \$5.00 and \$5.00 respectively and costs.



## APPENDIX No. 9

STATEMENT OF EXPENDITURE AND REVENUE, BY PROVINCES IN FISHERIES  
SERVICES 1867-1927 UNDER DOMINION GOVERNMENT

	SUMMARY	Expenditure	Revenue
Nova Scotia.....		4,175,528 24	312,588 31
Prince Edward Island.....		677,542 46	95,562 72
New Brunswick.....		3,263,922 18	538,434 45
Quebec.....		2,425,604 18	341,069 29
Ontario.....		3,214,671 13	520,135 96
Manitoba and N.W.T.....		23,414 29	4,779 25
Manitoba.....		1,573,435 25	268,564 58
N. W. Territories.....		58,258 58	9,775 23
Alberta.....		317,057 94	158,124 48
Saskatchewan.....		483,944 10	81,550 64
British Columbia.....		10,078,488 93	2,574,271 02
Yukon.....		29,343 94	10,292 75
Hudson Bay Dist.....			821 83
<i>Cruisers</i>			
N.S., P.E.I. and N.B.....		4,741,985 72	
		31,063,196 94	
<i>Expenditures General</i> .....		2,905,060 46	
<i>Fishing Bounty—</i>		33,968,257 40	
1882-1927.....		7,278,904 21	
		41,247,161 61	Total Expt. 1867-1927

## FISHING BOUNTIES

Year	Nova Scotia	New Brunswick	Prince Edward Island	Quebec	Totals
1882.....	\$106,098 72	\$16,997 00	\$18,137 00	\$33,052 75	\$172,285 47
1883.....	89,432 50	12,395 20	8,577 14	19,940 01	130,344 85
1884.....	104,934 09	13,576 00	9,230 96	28,004 93	155,718 98
1885.....	103,999 73	15,908 25	10,166 65	31,464 76	161,539 39
1886.....	98,789 54	17,894 57	10,935 87	33,283 61	160,903 59
1887.....	99,662 03	19,699 65	12,528 51	31,907 73	163,757 92
1888.....	89,778 90	18,454 92	9,092 96	32,858 75	150,185 53
1889.....	90,142 51	21,026 79	13,994 53	33,362 71	158,526 54
1890.....	91,235 64	21,108 33	11,686 32	34,210 72	158,241 01
1891.....	92,377 42	17,235 96	12,771 30	34,507 17	156,891 85
1892.....	109,410 39	10,864 61	9,782 79	29,694 35	159,752 14
1893.....	108,060 67	12,524 09	9,328 62	28,320 72	158,234 10
1894.....	111,460 03	12,690 80	7,875 79	28,040 18	160,066 80
1895.....	110,765 27	12,919 32	9,285 13	30,598 27	163,567 99
1896.....	98,048 95	13,602 88	9,745 50	32,992 44	154,389 77
1897.....	102,083 50	13,454 50	9,809 00	32,157 00	157,504 00
1898.....	103,730 00	13,746 00	10,188 00	31,795 00	159,459 00
1899.....	106,598 50	13,514 50	7,822 00	32,065 00	160,000 00
1900.....	101,448 00	13,562 50	10,589 00	33,203 00	158,802 50
1901.....	101,024 50	13,420 50	8,335 50	33,161 50	155,942 00
1902.....	100,455 70	14,555 80	8,716 55	36,125 45	159,853 50
1903.....	99,714 15	14,872 75	9,652 50	34,704 30	158,943 70
1904.....	99,286 44	15,110 80	9,179 35	33,651 65	157,228 24
1905.....	100,664 35	15,379 50	8,317 20	34,185 60	158,546 65
1906.....	99,518 80	16,247 55	8,839 40	34,410 00	159,015 75
1907.....	93,381 70	16,454 50	10,175 95	36,101 35	156,113 50
1908.....	98,156 20	17,203 75	9,708 90	34,931 05	159,999 90
1909.....	95,413 60	15,480 15	8,973 85	35,354 25	155,221 85
1910.....	96,468 20	16,531 05	9,557 80	36,609 70	159,166 75
1911.....	99,424 90	15,795 00	8,669 85	36,109 95	159,999 70
1912.....	97,904 25	15,109 75	11,119 00	35,863 40	159,996 40
1913.....	93,456 00	16,385 05	11,081 85	37,738 35	158,661 25
1914.....	94,990 54	17,536 50	10,339 65	36,717 45	159,584 14
1915.....	90,611 05	17,609 95	9,513 95	41,006 10	158,741 05
1916.....	88,212 10	17,540 15	9,961 95	44,285 60	159,999 80
1917-18.....	86,115 60	17,538 35	10,754 75	45,484 40	159,893 10
1918-19.....	85,000 65	17,114 35	10,392 35	47,167 90	159,675 25
1919-20.....	85,521 05	16,085 20	8,702 20	44,828 25	155,136 70
1920-21.....	93,873 00	13,773 70	8,110 70	36,761 90	152,519 30
1921-22.....	91,410 20	14,640 60	9,413 00	43,986 00	159,449 80
1922-23.....	93,254 45	16,311 25	7,704 40	39,902 45	157,172 55
1923-24.....	91,261 55	16,123 25	10,153 65	42,378 35	159,916 80
1924-25.....	86,300 20	15,634 05	11,410 15	46,482 00	159,826 40
1925-26.....	82,550 35	18,824 30	10,670 70	47,939 45	159,984 80
1926-27.....	83,006 90	16,721 00	13,221 55	46,818 65	159,768 10
1927-28.....	82,107 00	19,906 80	12,095 45	44,266 55	158,375 80
	4,427,099 82	729,081 47	464,292 22	1,658,430 70	7,278,904 21

STATEMENT SHOWING THE ANNUAL EXPENDITURE ON ACCOUNT OF MARINE  
POLICE SERVICE ON THE ATLANTIC COASTS OF CANADA FOR PATROLLING  
THE TERRITORIAL FISHERIES 1870-1874 INCLUSIVE

1870.....	\$	
1871.....		73,550 86
1872.....		50,123 24
1873.....		53,794 90
1874.....		15,364 69
		<hr/>
		192,833 69

During the period 1875 to 1885, inclusive, the Washington Treaty, which gave United States fishermen the use of Canadian Inshore fisheries, was in force.

On the expiry of the Fishery Articles of the Treaty of Washington, the present Fisheries Protection Service was organized in 1886. The following is a statement of the annual expenditure on such account from 1886 to 1927-28 inclusive.

## FISHERIES PROTECTION SERVICE

In addition to Cruisers, entered under Ontario, Quebec and British Columbia:—

1886.....	\$	104,020 98
1887.....		86,300 74
1888.....		59,869 47
1889.....		47,748 94
1890.....		51,296 34
1891.....		81,918 99
1892.....		84,305 51
1893.....		60,269 69
1894.....		70,501 71
1895.....		61,310 19
1896.....		64,064 00
1897.....		71,349 44
1898.....		78,097 10
1899.....		68,330 27
1900.....		66,148 97
1901.....		96,648 26
1902.....		75,942 24
1903.....		75,543 60
1904.....		103,427 32
1905.....		294,440 34
1906.....		136,432 61
1907.....		99,015 07

(No proper division of the expenditure of these roving Cruisers could be made between the Maritime Provinces, although *pro rata* shares are fairly chargeable to N.S., N.B., and P.E.I.)

1908-09.....	\$	114,923 00
1909-10.....		113,582 23
1910-11.....		116,235 21
1911-12.....		120,240 00
1912-13.....		163,370 19
1913-14.....		225,113 26
1914-15.....		95,702 02
1915-16.....		102,637 46
1916-17.....		132,393 60
1917-18.....		118,824 16
1918-19.....		56,256 78
1919-20.....		218,143 93
1920-21.....		227,159 57
1921-22.....		172,003 39
1922-23.....		107,658 85
1923-24.....		95,332 27
1924-25.....		95,714 47
1925-26.....		98,060 10
1926-27.....		113,804 14
1927-28.....		125,015 62
		<hr/>
		4,741,985 72

A pro-rate share of this amount is chargeable to the Provinces of N.S., N.B., and P.E.I.

STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE CONFEDERATION

PROVINCE OF PRINCE EDWARD ISLAND

Year	General Service	Cruisers	Fish Breeding	Total	Revenue
	\$		\$	\$	\$
1867.....					
1868.....					
1869.....					
1870.....					
1871.....					
1872.....					
1873.....					
1874.....	405 62			405 62	
1875.....	459 54			459 54	
1876.....	461 02			461 02	
1877.....	1,974 70			1,974 70	
1878.....	1,836 54			1,836 54	
1879.....	1,293 25			1,293 25	
1880.....	2,686 49		4,494 24	7,180 83	40 00
1881.....	2,691 49		852 11	3,543 60	40 00
1882.....	2,756 48		760 32	3,516 80	40 00
1883.....	2,716 64		807 32	3,523 96	80 00
1884.....	2,767 98		771 40	3,539 38	80 00
1885.....	3,028 03		741 06	3,769 09	40 00
1886.....	3,187 73		687 17	3,874 90	40 00
1887.....	4,044 49		1,200 21	5,244 70	128 00
1888.....	3,402 51		755 32	4,157 83	
1889.....	3,746 69		140 31	3,887 00	140 00
1890.....	3,113 21			3,113 21	302 88
1891.....	3,242 27		378 00	3,620 25	667 00
1892.....	1,835 65			1,835 65	166 00
1893.....	2,847 60			2,847 60	304 10
1894.....	3,078 55			3,078 55	980 15
1895.....	3,796 58			3,796 58	3,312 30
1896.....	3,555 87			3,555 87	2,161 85
1897.....	3,744 36			3,744 36	2,032 25
1898.....	6,775 78			6,775 78	2,707 57
1899.....	5,832 35			5,832 35	2,242 24
1900.....	7,364 20			7,364 20	2,207 12
1901.....	7,934 03			7,934 03	1,525 30
1902.....	7,814 02			7,814 02	1,843 45
1903.....	7,081 60			7,081 60	2,007 35
1904.....	7,320 96		10,733 51	18,054 47	1,983 42
1905.....	6,879 05		6,813 77	13,692 82	2,046 50
1906.....	9,351 81		6,419 04	15,770 85	2,206 25
1907.....	5,841 67		2,952 47	8,794 14	1,300 94
1908-09.....	14,996 00		7,187 47	22,183 47	2,393 66
1909-10.....	13,657 56		8,139 50	21,797 06	2,359 93
1910-11.....	38,570 72		8,874 42	47,445 14	2,499 63
1911-12.....	13,661 00		8,876 00	22,537 00	2,477 50
1912-13.....	13,558 06		6,105 63	19,663 69	2,927 96
1913-14.....	13,728 89		7,383 45	21,112 34	2,245 60
1914-15.....	17,369 93		8,071 93	25,441 86	2,046 50
1915-16.....	14,794 05		9,638 61	24,432 66	3,165 35
1916-17.....	15,843 23		7,211 18	23,054 41	3,597 18
1917-18.....	19,076 19		7,994 24	27,070 43	3,256 26
1918-19.....	15,722 08		3,003 84	18,725 92	2,561 19
1919-20.....	17,430 98		2,918 40	20,349 38	4,741 68
1920-21.....	22,911 72		4,312 69	27,224 41	3,720 12
1921-22.....	15,430 17		4,304 58	19,734 75	2,876 47
1922-23.....	17,996 16		4,801 56	22,797 72	5,854 88
1923-24.....	22,111 52		4,859 03	26,970 55	4,441 95
1924-25.....	26,051 31		5,147 60	31,198 91	3,134 90
1925-26.....	26,719 74		6,609 94	33,329 68	3,467 88
1926-27.....	20,302 73		4,533 27	24,836 00	3,403 13
1927-28.....	19,176 79		5,085 20	24,261 99	3,766 28
	513,977 57		163,564 89	677,542 46	95,562 72

See Cruiser sheet N.S., P.E.I. & N.B.



## STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE CONFEDERATION.

(\*Revenue from licenses to U.S. Fishing Vessels to which the Province has no exclusive title.)

## PROVINCE OF NOVA SCOTIA

Year	General Service	Cruisers	Fish Breeding	Total	Revenue
	\$ cts.		\$ cts.	\$ cts.	\$ cts.
1867					
1868	225 28			225 28 *	12,275 25
1869	2,572 23			2,572 23	848 46
1870	9,728 26			9,728 26 *	1,373 24
1871	8,794 37			8,794 37	36 74
1872	8,341 39			8,341 39	51 45
1873	8,689 07			8,689 07	159 30
1874	10,585 13			10,585 13	123 94
1875	12,265 86			12,265 86	551 00
1876	14,655 76		6,870 33	21,526 09	403 00
1877	15,127 49		3,488 27	18,615 76	1,520 71
1878	15,292 83		3,400 00	18,692 83	1,442 38
1879	14,312 76		2,687 44	17,000 20	1,796 11
1880	14,180 55		3,323 16	17,503 71	1,506 72
1881	14,909 42		3,454 29	18,363 71	2,779 49
1882	16,479 41		5,858 98	22,338 39	1,111 61
1883	16,247 14		4,191 34	20,438 48	2,005 29
1884	15,600 01		4,728 11	20,428 12	1,833 18
1885	17,503 45		4,610 81	22,114 26	2,616 28
1886	17,852 33		7,478 23	25,330 56	2,166 53
1887	18,092 21		6,701 89	24,794 00	1,585 28
1888	18,308 02		6,850 27	25,158 29	3,905 44
1889	20,201 09		6,688 75	26,889 84	2,744 23
1890	17,395 24		6,006 95	24,002 19	5,424 95
1891	17,844 19		5,863 75	23,707 94	5,891 65
1892	18,755 86		10,289 80	29,045 66	3,803 42
1893	19,444 22		5,045 22	24,489 44	6,782 02
1894	20,420 81		4,982 12	25,402 93	5,296 27
1895	23,555 38		5,054 24	28,609 62	7,075 07
1896	23,049 41		5,010 39	28,059 80	6,180 93
1897	23,682 33		4,077 07	27,759 40	5,239 55
1898	21,683 91		3,525 03	25,208 94	5,317 08
1899	25,348 11		2,465 19	27,813 30	4,668 22
1900	27,461 91		3,410 84	30,872 75	5,494 49
1901	35,730 69		11,194 82	46,925 51	6,595 94
1902	32,618 00		8,810 31	41,428 31	6,084 65
1903	39,118 79		7,413 55	46,532 34	3,962 45
1904	30,003 01		6,348 22	36,351 23	3,716 75
1905	32,619 85		11,372 65	43,992 50	6,718 58
1906	49,351 10		33,203 27	82,554 37	4,934 43
1907	24,989 09		6,259 25	31,248 34	3,118 73
1908-09	87,420 00		20,969 27	108,389 27	5,369 70
1909-10	81,698 70		15,722 27	97,420 97	3,821 81
1910-11	117,394 67		28,023 29	145,417 96	7,749 60
1911-12	141,148 00		42,727 00	183,875 00	5,912 65
1912-13	97,085 48		46,411 56	143,497 04	6,730 00
1913-14	125,305 94		45,732 88	171,038 82	7,682 50
1914-15	124,977 45		37,470 70	162,448 15	7,415 80
1915-16	117,271 06		34,914 01	152,185 07	6,969 18
1916-17	126,416 67		33,543 89	159,960 56	7,176 70
1917-18	139,964 62		36,057 56	176,022 18	6,663 94
1918-19	112,689 57		17,233 22	129,922 79	7,612 81
1919-20	92,197 95		16,243 01	109,160 96	10,213 28
1920-21	111,196 47		22,077 83	133,274 30	12,189 62
1921-22	112,521 25		21,247 10	133,768 35	12,840 39
1922-23	121,336 89		27,399 27	148,736 16	12,720 42
1923-24	138,671 11		42,395 03	181,066 14	9,480 38
1924-25	153,463 48		32,467 75	185,931 23	10,627 54
1925-26	170,967 83		31,053 08	202,020 91	9,539 68
1926-27	171,975 48		29,869 84	201,845 32	10,973 25
1927-28	237,097 63		28,148 93	265,246 56	11,758 25
	3,354,556 21		820,972 03	4,175,528 24	312,588 31

See Cruiser Sheet N.S., P.E.I., and N.B.

Year	General Service		Cruisers	Fish Breeding		Total		Revenue	
	\$	cts.		\$	cts.	\$	cts.	\$	cts.
1867.....			See Cruiser Sheet N.S., P.E.I., and N.B.			5,086 77		443 47	
1868.....	5,086	77						* 5,410 58	
1869.....	4,172	35				4,172 35		1,086 42	
1870.....	8,422	63				8,422 63		1,042 03	
1871.....	7,006	52				7,006 52		1,058 29	
1872.....	6,476	61				6,476 61		647 61	
1873.....	6,859	05		822	33	7,681 38		978 00	
1874.....	7,351	17		3,100	13	10,451 30		830 00	
1875.....	7,373	75		3,853	73	11,227 48		2,030 91	
1876.....	10,080	37		3,247	41	13,327 78		1,289 17	
1877.....	11,168	53		1,388	80	12,557 33		2,015 46	
1878.....	10,926	11		1,468	22	12,394 33		3,467 36	
1879.....	10,853	64		1,139	00	11,997 64		4,276 07	
1880.....	12,291	00		5,600	00	17,891 00		4,695 28	
1881.....	11,776	56		3,455	91	15,232 47		4,848 84	
1882.....	12,284	82		3,567	28	15,852 10		4,612 12	
1883.....	13,007	00		2,646	14	15,653 14		3,905 66	
1884.....	14,388	02		2,327	06	16,715 08		4,650 16	
1885.....	14,892	87		2,943	98	17,836 85		4,078 10	
1886.....	15,719	36		2,852	02	18,571 38		4,417 52	
1887.....	16,944	00		2,907	16	19,851 16		7,625 64	
1888.....	20,533	20		3,441	59	23,974 79		8,642 88	
1889.....	20,298	00		3,150	17	23,448 17		8,834 35	
1890.....	14,914	95		3,727	77	18,642 72		7,233 69	
1891.....	16,082	77		4,572	41	20,655 18		6,634 83	
1892.....	15,707	98		4,304	98	20,012 96		7,831 53	
1893.....	15,721	05		4,988	13	20,709 18		8,333 24	
1894.....	18,522	94		4,833	27	23,356 21		11,170 36	
1895.....	21,370	94		5,896	95	27,267 89		10,696 88	
1896.....	20,526	56		6,551	62	27,078 18		10,110 77	
1897.....	21,671	92		3,722	01	25,393 93		11,511 85	
1898.....	17,063	58		3,958	63	21,022 21		10,430 08	
1899.....	22,922	50		7,514	86	30,437 36		12,015 27	
1900.....	21,459	94		3,951	58	25,411 52		10,150 40	
1901.....	28,452	51		5,976	29	34,428 80		11,658 34	
1902.....	23,813	62		12,245	86	36,059 48		11,188 02	
1903.....	27,132	84		16,099	01	43,231 85		10,643 20	
1904.....	27,664	34		22,177	05	49,841 39		11,898 99	
1905.....	25,253	16		15,477	39	40,730 55		11,395 84	
1906.....	35,856	38		25,759	09	61,615 47		9,158 08	
1907.....	24,938	35		16,900	00	41,838 35		12,385 14	
1908-09.....	71,091	00		22,214	39	93,305 39		13,044 88	
1909-10.....	63,154	19		21,102	75	84,256 94		12,996 84	
1910-11.....	63,769	48		20,414	56	84,184 04		13,902 15	
1911-12.....	58,140	00		22,950	00	81,090 00		15,192 52	
1912-13.....	60,943	53		30,267	38	91,210 91		17,507 18	
1913-14.....	63,653	64		51,641	12	115,294 76		15,097 80	
1914-15.....	67,954	09		52,560	08	120,514 17		15,097 80	
1915-16.....	65,874	11		40,876	42	106,750 53		15,137 19	
1916-17.....	67,645	91		37,987	56	105,633 47		14,429 53	
1917-18.....	70,148	87		37,021	69	107,170 56		16,420 52	
1918-19.....	67,763	94		36,351	19	104,115 13		16,441 02	
1919-20.....	73,821	07		34,275	01	108,096 08		15,299 82	
1920-21.....	86,431	23		41,493	38	127,924 61		16,212 85	
1921-22.....	102,713	10		44,971	62	147,684 72		19,286 01	
1922-23.....	96,836	88		50,298	75	147,135 63		13,010 14	
1923-24.....	71,052	58		40,870	11	111,922 69		11,701 49	
1924-25.....	97,200	01		46,096	12	143,296 13		9,754 13	
1925-26.....	106,052	99		50,910	64	156,963 63		10,740 76	
1926-27.....	99,696	49		48,245	23	147,941 72		12,663 50	
1927-28.....	113,738	34		102,131	24	215,869 58			
	2,214,675	11		1,049,247	07	3,263,922	18	538,434	45

## STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE CONFEDERATION.

## PROVINCE OF QUEBEC

Year	General Service	Cruisers	Fish Breeding	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1867.....	10,272 82	14,426 53		24,699 35	6,998 90
1868.....	17,889 92	11,374 95		29,264 87	4,910 87
1869.....	6,909 61	10,800 00		17,709 61	4,585 80
1870.....	6,570 42	9,924 51		16,494 93	* 7,997 21
1871.....	7,000 00	9,000 00		16,000 00	6,290 85
1872.....	6,489 68	12,000 00		18,489 68	4,569 69
1873.....	7,829 94	9,000 00		16,829 94	4,983 83
1874.....	9,265 31	10,000 00	6,106 00	25,371 31	8,523 54
1875.....	9,808 34	10,000 00	8,515 46	28,323 80	8,904 85
1876.....	14,282 65	23,832 82	9,016 74	47,132 21	6,437 00
1877.....	13,521 44	17,059 21	5,670 86	36,251 51	5,881 72
1878.....	12,723 88	19,967 11	6,685 85	39,376 84	5,453 27
1879.....	13,606 06	8,994 48	5,772 90	28,373 44	6,286 07
1880.....	12,591 78	1,880 08	4,701 34	19,173 20	7,124 42
1881.....	15,123 79	50,550 18	5,444 89	71,118 86	9,286 18
1882.....	14,819 22	26,965 40	9,148 68	50,933 30	7,165 32
1883.....	13,287 30	26,555 46	7,987 12	47,829 88	3,869 47
1884.....	13,186 26	19,935 53	8,512 11	41,633 90	2,715 02
1885.....	13,531 77	*31,014 07	10,072 52	55,118 36	3,325 35
1886.....	13,938 21	26,091 20	9,197 89	49,227 30	2,963 75
1887.....	14,966 55	18,293 16	8,740 66	42,000 37	3,804 66
1888.....	13,463 37	17,233 51	8,921 13	39,618 01	5,394 99
1889.....	12,991 63	16,034 04	10,228 72	39,254 39	3,390 79
1890.....	9,670 94	15,001 91	8,370 15	33,043 00	5,409 81
1891.....	10,666 98	15,143 46	9,142 31	34,952 75	3,642 14
1892.....	10,917 36	14,026 98	8,341 94	33,286 28	5,244 82
1893.....	11,761 34	14,688 97	9,337 79	35,788 10	7,471 70
1894.....	11,692 82	25,645 29	8,635 41	45,973 52	7,211 82
1895.....	12,459 34	19,523 86	8,854 64	40,837 84	8,368 18
1896.....	11,870 43	20,661 78	8,260 50	40,792 71	8,160 98
1897.....	12,910 80	12,059 54	7,059 45	32,029 79	7,876 12
1898.....	11,140 16	13,781 53	6,128 40	31,050 09	7,571 15
1899.....	11,350 27	21,680 55	5,700 58	38,731 40	6,287 71
1900.....	5,452 41	18,970 42	12,701 04	37,123 87	2,543 04
1901.....	7,934 03	16,258 44	15,218 64	39,411 11	4,738 02
1902.....	6,242 58	24,995 46	20,142 94	51,380 98	2,498 85
1903.....	6,585 86	21,021 00	8,080 03	35,686 89	4,379 15
1904.....	7,619 67	23,011 05	11,454 24	42,084 96	5,070 64
1905.....	6,769 16	15,976 88	14,140 65	36,886 69	4,648 56
1906.....	8,123 04	26,969 49	12,617 01	47,709 54	7,564 39
1907.....	5,590 94	22,763 29	10,683 24	39,037 47	8,145 97
1908-09.....	11,960 00	36,402 00	16,760 46	65,122 46	6,797 91
1909-10.....	10,316 05	25,811 96	19,292 31	55,420 32	4,947 46
1910-11.....	8,984 36	42,975 48	20,290 50	72,250 34	5,336 61
1911-12.....	17,050 00	32,998 00	18,104 00	68,152 00	6,044 75
1912-13.....	10,998 48	25,321 81	17,152 03	53,472 32	8,095 79
1913-14.....	9,921 88	29,770 88	23,042 82	62,735 58	5,286 89
1914-15.....	11,503 00	30,644 81	22,000 08	64,147 89	7,639 75
1915-16.....	6,995 74	31,893 30	17,323 62	56,212 66	6,006 89
1916-17.....	7,168 09	26,356 47	14,274 14	47,798 70	6,981 14
1917-18.....	8,399 76	42,752 33	19,727 25	70,879 34	7,664 73
1918-19.....	7,470 58	41,563 30	12,923 27	61,957 15	8,121 80
1919-20.....	9,793 46	33,679 99	13,125 26	56,598 71	8,085 78
1920-21.....	33,182 26	45,963 09	15,955 38	95,100 73	6,536 90
1921-22.....	23,815 41	49,947 22	18,772 19	92,134 82	14,357 39
1922-23.....	2,146 60	904 32	2,668 48	5,719 40	.....
1923-24.....	282 90	143 81	.....	426 71	.....
1924-25.....	178 47	.....	.....	178 47	.....
1925-26.....	596 52	.....	.....	596 57	.....
1926-27.....	123 12	.....	.....	123 12	.....
1927-28.....	144 84	.....	.....	144 84	.....
	623,859 65	1,240,740 91	561,003 62	2,425,604 18	341,069 29



## MARINE AND FISHERIES

## PROVINCE OF ONTARIO

Year	General Service		Cruisers		Fish Breeding		Total		Revenue	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
1867.....	6,108	00					6,108	00	3,492	00
1868.....	6,526	96					6,526	96	1,927	02
1869.....	8,547	65					8,547	65	2,739	13
1870.....	5,995	72			2,874	47	8,870	19	6,165	56
1871.....	5,825	98			4,446	34	10,272	32	5,039	35
1872.....	4,364	43			5,529	73	9,894	16	4,818	57
1873.....	4,344	32			3,697	16	8,041	48	4,547	50
1874.....	8,969	06			5,100	00	14,069	06	4,386	75
1875.....	8,388	81			5,635	74	14,024	55	4,478	05
1876.....	12,815	73			12,920	90	25,736	63	4,640	21
1877.....	13,521	44			12,132	70	25,654	14	4,673	25
1878.....	12,723	88			4,949	77	17,673	65	5,202	00
1879.....	11,741	40			7,102	54	18,843	94	6,188	80
1880.....	12,003	37			5,300	71	17,304	08	6,465	95
1881.....	11,506	74			5,422	63	16,929	37	7,795	99
1882.....	11,729	77			8,655	82	20,385	59	9,849	18
1883.....	13,602	00			7,761	45	21,363	45	9,980	28
1884.....	15,192	73			8,011	17	23,203	90	11,345	14
1885.....	17,135	98			8,690	15	25,826	13	11,914	37
1886.....	17,900	74			9,696	54	27,597	28	15,917	62
1887.....	19,534	01			8,880	14	28,414	15	15,063	57
1888.....	19,860	52			9,529	00	29,389	52	18,251	25
1889.....	19,264	98	2,631	46	11,311	33	33,207	77	24,266	06
1890.....	14,539	87	2,254	63	11,494	31	28,288	81	23,666	95
1891.....	15,540	30	2,769	29	11,769	81	30,079	40	26,611	70
1892.....	15,155	83	5,064	91	9,281	37	29,502	11	26,708	00
1893.....	20,116	91	32,940	56	11,194	65	64,252	12	30,623	09
1894.....	22,634	37	20,022	18	10,821	43	53,477	98	28,632	82
1895.....	21,938	56	19,373	24	8,755	93	50,067	73	33,211	60
1896.....	24,917	48	17,295	94	9,468	37	51,681	79	35,681	68
1897.....	21,592	40	15,948	43	8,774	19	46,315	02	32,814	66
1898.....	19,239	34	15,155	43	9,976	74	44,371	51	30,574	57
1899.....	11,784	22	15,122	45	9,982	10	36,888	97	5,830	85
1900.....	3,604	94	12,250	72	10,675	72	26,531	38	794	12
1901.....	3,819	57	11,304	51	12,835	60	27,959	68	717	35
1902.....	4,445	93	11,764	87	12,445	31	28,656	11	373	42
1903.....	4,660	53	12,334	37	14,844	36	31,839	26	1,818	83
1904.....	4,500	43	45,133	10	15,300	46	64,933	99	2,578	48
1905.....	4,294	60	109,560	51	13,832	32	127,687	43	1,471	91
1906.....	4,949	67	32,585	51	15,069	17	52,604	35	499	15
1907.....	3,188	34	32,698	85	14,112	42	49,999	61	349	10
1908-09.....	14,898	00	36,038	00	28,358	02	79,294	02	790	78
1909-10.....	9,672	24	26,009	14	22,614	30	58,295	68	1,520	75
1910-11.....	11,788	30	24,237	49	24,393	21	60,419	00	280	25
1911-12.....	28,127	00	28,006	00	47,611	00	103,744	00	658	45
1912-13.....	13,213	90	30,015	23	61,580	26	104,809	41	548	74
1913-14.....	22,733	57	27,650	61	68,877	81	119,261	99	806	69
1914-15.....	23,048	82	30,169	08	103,182	20	156,400	10	918	80
1915-16.....	19,468	64	28,216	58	63,712	73	111,397	95	2,600	65
1916-17.....	14,588	69	25,994	06	85,922	62	126,505	37	808	70
1917-18.....	15,838	94	36,708	63	69,864	18	122,411	75	2,345	48
1918-19.....	4,586	56	53,404	30	64,996	55	122,987	41	631	85
1919-20.....	247	00	39,575	17	75,479	78	115,301	95	1,421	80
1920-21.....	5	09	84,373	39	82,320	21	166,698	60	9,221	25
1921-22.....			52,260	83	80,403	37	132,664	20	44,425	97
1922-23.....			27,901	41	79,690	16	107,591	57	4,169	29
1923-24.....			355	62	84,180	87	84,536	49	6,076	71
1924-25.....					79,471	88	79,471	88	957	73
1925-26.....					79,938	10	79,938	10	9,719	28
1926-27.....					19,894	97	19,894	97	126	91
1927-28.....					25	38	25	38		
	666,744	26	967,126	52	1,580,800	35	3,214,671	13	520,135	96

## MANITOBA AND NORTHWEST TERRITORIES

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1867-68.....					
1868-69.....					
1869-70.....					
1870-71.....					
1871-72.....					
1872-73.....					
1873-74.....					
1874-75.....	288 65			288 65	
1875-76.....					
1876-77.....	250 00			250 00	
1877-78.....	200 00			200 00	
1878-79.....	200 00			200 00	
1879-80.....	19 75			19 75	
1880-81.....					
1881-82.....	809 55			809 55	
1882-83.....	150 00			150 00	
1883-84.....	872 40			872 40	
1884-85.....	763 00			763 00	
1885-86.....	1,920 73			1,920 73	
1886-87.....	2,468 25			2,468 25	5 00
1887-88.....	2,816 64			2,816 64	819 25
1888-89.....	2,848 16			2,848 16	848 00
1889-90.....	2,604 70			2,604 70	794 00
1890-91.....	3,609 03			3,609 30	1,234 00
1891-92.....	3,593 43			3,593 43	1,079 00
	23,414 29			23,414 29	4,779 25

NOTE.—Subsequent to 1892, see Manitoba and Northwest Territories Separate Sheets.

## STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE 1892.

## PROVINCE OF MANITOBA

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1892-93.....	2,162 55		6,943 35	9,105 90	1,464 68
1893-94.....	2,187 35		7,362 53	9,549 88	715 85
1894-95.....	2,663 55		3,849 98	6,513 53	2,149 30
1895-96.....	3,952 18		2,865 69	6,817 87	1,670 19
1896-97.....	1,908 14		24 79	1,932 93	1,719 00
1897-98.....	1,206 26		1,586 12	2,792 38	1,515 00
1898-99.....	1,883 37		3,967 36	5,850 73	1,537 85
1899-00.....	1,723 59		2,791 71	4,515 30	2,028 00
1900-01.....	2,669 74		4,174 53	6,844 27	1,103 00
1901-02.....	2,624 87		2,622 43	5,247 30	2,279 00
1902-03.....	3,129 70		2,415 09	5,544 79	1,784 00
1903-04.....	2,789 74		3,978 04	6,767 78	4,002 70
1904-05.....	2,800 64		7,041 67	9,842 31	4,879 70
1905-06.....	3,687 07	7,867 70	25,923 29	37,478 06	4,148 00
1906-07.....	2,173 33	55 00	15,858 35	18,086 68	2,285 98
1907-08.....	4,638 51	13,903 95	25,283 46	43,825 92	3,527 05
1908-09.....	3,946 00	7,560 00	16,987 13	28,493 13	3,704 22
1909-10.....	9,359 23	7,794 02	14,386 86	31,540 11	3,962 88
1910-11.....	9,423 70	7,309 55	15,161 39	31,894 64	8,137 75
1911-12.....	7,371 00	6,571 00	15,793 00	29,735 00	6,334 00
1912-13.....	7,062 15	12,298 62	40,801 11	60,161 88	6,039 00
1913-14.....	29,694 13	48,006 49	47,769 97	125,470 59	4,846 50
1914-15.....	28,887 50	172,677 12	31,532 95	233,097 57	8,312 08
1915-16.....	13,518 89	61,986 35	26,654 36	102,159 60	5,926 00
1916-17.....	13,228 17	19,122 24	25,750 64	58,101 05	8,252 27
1917-18.....	13,164 99	18,943 45	28,277 84	60,386 28	12,910 65
1918-19.....	11,647 78	22,058 23	29,405 83	63,111 84	12,730 20
1919-20.....	8,704 69	21,176 75	26,379 94	56,261 38	12,139 17
1920-21.....	10,979 14	16,787 94	38,893 96	66,661 04	17,792 58
1921-22.....	14,458 95	23,624 52	33,850 69	71,934 16	11,636 54
1922-23.....	17,570 39	21,852 05	30,787 33	70,209 77	12,736 68
1923-24.....	14,630 97	20,051 25	28,429 89	63,112 11	15,683 38
1924-25.....	14,197 83	21,519 12	25,646 64	61,363 59	17,631 21
1925-26.....	17,172 70	22,251 26	21,265 04	60,689 00	17,908 00
1926-27.....	16,679 07	21,775 71	19,924 81	58,379 59	21,291 05
1927-28.....	21,379 96	15,623 11	22,954 22	59,957 29	23,781 18
	325,277 83	590,815 43	657,341 99	1,573,435 25	268,564 58

NOTE.—Prior to 1892 see Manitoba and Northwest Territories.

## MARINE AND FISHERIES

## STATEMENT SHOWING ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE 1906.

## PROVINCE OF SASKATCHEWAN

Year	General Services	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1906-07.....	2,677 77			2,677 77	509 00
1907-08.....	7,277 49			7,277 49	948 60
1908-09.....	6,591 00			6,591 00	1,085 50
1909-10.....	6,474 57			6,474 57	1,209 44
1910-11.....	10,470 46			10,470 46	1,246 00
1911-12.....	* 26,040 00			* 26,040 00	1,304 75
1912-13.....	* 17,850 00			* 17,850 00	4,268 50
1913-14.....	* 24,964 74		* 13,969 84	* 38,934 58	8,253 05
1914-15.....	* 34,130 50		20,642 23	54,772 73	4,329 65
1915-16.....	* 31,294 44		4,714 72	36,009 16	3,195 00
1916-17.....	16,002 77		4,897 97	20,900 74	3,103 25
1917-18.....	16,959 11		5,732 96	22,692 07	3,643 65
1918-19.....	16,966 00		5,529 72	22,495 72	4,982 83
1919-20.....	19,019 11		4,147 16	23,166 27	4,321 00
1920-21.....	12,700 20		7,180 29	19,880 49	4,077 30
1921-22.....	15,330 53		6,157 00	21,487 53	3,474 31
1922-23.....	14,212 56		7,887 32	22,099 88	2,904 65
1923-24.....	14,281 88		6,981 38	21,263 26	3,589 50
1924-25.....	16,469 50		8,505 56	24,975 06	6,706 39
1925-26.....	18,156 07		6,873 95	25,030 02	6,066 35
1926-27.....	18,590 43		6,878 44	25,468 87	6,057 68
1927-28.....	19,593 93		7,792 50	27,386 43	6,274 24
	366,053 06		117,891 04	483,944 10	81,550 64

\*Includes Alberta.

## STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE 1906.

## PROVINCE OF ALBERTA

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1906-07.....	3,681 45			3,681 45	2 50
1907-08.....	5,440 66			5,440 66	2 50
1908-09.....	5,714 00			5,714 00	915 00
1909-10.....	8,063 22			8,063 22	703 00
1910-11.....	10,739 86			10,739 86	698 50
1911-12.....	*				709 00
1912-13.....	*				*
1913-14.....	*				*
1914-15.....	*		5,608 42	5,608 42	6,102 50
1915-16.....	* 4,798 69		4,798 69	4,798 69	5,237 85
1916-17.....	15,086 14		4,543 09	19,629 23	5,970 40
1917-18.....	13,262 62		4,127 81	17,390 43	9,767 94
1918-19.....	50,267 84		4,920 96	20,188 80	10,288 15
1919-20.....	15,633 19		7,203 06	22,836 25	8,313 85
1920-21.....	12,700 20		8,617 04	21,317 24	8,693 75
1921-22.....	12,473 92		9,956 33	22,430 25	10,119 30
1922-23.....	13,690 46		6,552 84	20,243 30	11,947 80
1923-24.....	13,880 42		6,419 16	20,299 58	10,111 50
1924-25.....	16,431 37		5,280 07	21,711 44	12,708 13
1925-26.....	18,744 72		8,255 38	27,000 10	14,932 99
1926-27.....	21,391 73		8,345 03	29,736 76	20,233 41
1927-28.....	22,435 76		7,792 50	30,228 26	20,666 41
	224,637 56		92,420 38	317,057 94	158,124 48

\*Included in Saskatchewan.



## STATEMENT SHOWING THE ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE SINCE 1892.

## NORTHWEST TERRITORIES

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1892-93.....	1,770 41			1,770 41	197 00
1893-94.....	3,143 94			3,143 94	211 14
1894-95.....	3,515 16			3,515 16	309 50
1895-96.....	2,963 02			2,963 02	586 50
1896-97.....	2,181 58			2,181 58	344 13
1897-98.....	2,324 66			2,324 66	393 87
1898-99.....	4,065 68			4,065 68	150 50
1899-00.....	3,848 25			3,848 25	1,522 50
1900-01.....	6,251 39			6,251 39	816 55
1901-02.....	5,928 22			5,928 22	950 07
1902-03.....	7,076 26			7,076 26	1,350 50
1903-04.....	7,317 49			7,317 49	922 50
1904-05.....	7,003 55			7,003 55	1,151 50
1905-06.....	11,124 22			11,124 22	868 97
	58,258 58			58,258 58	9,775 23

NOTE.—For Alberta and Saskatchewan subsequent to 1906 see separate statements for each.

## STATEMENT SHOWING ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE.

## HUDSON BAY DISTRICT

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1903-04.....					10 00
1904-05.....					10 00
1905-06.....					10 00
1906-07.....					10 00
1907-08.....					360 00
1908-09.....					20 00
1909-10.....					301 83
1910-11.....					100 00
					821 83

STATEMENT SHOWING ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED  
BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE  
SINCE CONFEDERATION.

PROVINCE OF BRITISH COLUMBIA

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1867.					
1868.					
1869.					
1870.					
1871.					
1872.					
1873.					
1874.					
1875.					
1876.					
1877.	635 00			635 00	
1878.	690 00			690 00	
1879.	1,423 73			1,423 73	
1880.	1,399 92			1,399 92	10 00
1881.	1,721 48			1,721 48	
1882.	1,599 08			1,599 08	672 50
1883.	1,599 92			1,599 92	790 00
1884.	2,231 97		3,704 31	5,936 28	127 50
1885.	1,437 13		11,873 17	13,310 30	365 50
1886.	1,878 53		5,405 87	7,284 40	922 50
1887.	5,860 72		4,623 35	10,484 07	943 50
1888.	3,661 83		5,653 90	9,315 73	6,934 55
1889.	4,333 63		4,933 26	9,266 89	6,416 00
1890.	3,634 41		4,202 61	7,837 02	11,367 50
1891.	4,320 53		3,339 51	7,660 04	12,914 02
1892.	6,158 17		2,896 57	9,054 74	8,192 48
1893.	5,490 60		3,630 68	9,121 28	40,264 00
1894.	5,283 21		3,273 10	8,556 31	25,337 90
1895.	6,218 74		2,869 19	9,087 93	23,517 25
1896.	6,226 77		2,817 02	9,043 79	26,410 75
1897.	8,841 64		2,840 62	11,682 26	39,888 82
1898.	8,508 79		2,389 46	10,898 25	47,864 75
1899.	8,459 47		3,736 14	12,195 61	45,801 75
1900.	13,662 17		2,741 88	16,404 05	53,195 35
1901.	17,886 36		17,709 77	35,596 13	52,960 35
1902.	18,660 73	40,122 50	20,508 57	79,291 80	41,178 65
1903.	17,808 45	36,239 02	23,275 29	77,322 76	43,015 62
1904.	15,133 65	33,083 19	25,040 81	73,257 65	56,904 34
1905.	16,631 37	42,104 39	61,675 57	120,411 33	47,436 00
1906.	30,141 35	54,113 76	83,687 16	167,942 25	51,532 50
1907.	20,381 97	34,228 34	39,379 94	93,990 25	29,903 95
1908-09.	55,951 00	86,151 00	64,149 57	206,251 57	39,251 65
1909-10.	44,799 61	306,185 98	66,847 35	417,832 94	41,864 80
1910-11.	99,794 13	80,532 84	97,848 04	278,175 01	45,846 70
1911-12.	43,265 00	133,558 00	75,907 00	252,730 00	44,898 51
1912-13.	110,779 22	221,061 83	68,719 37	400,560 42	48,824 50
1913-14.	129,393 33	501,715 55	83,123 10	714,231 98	52,835 50
1914-15.	227,807 84	153,082 83	77,340 42	458,231 09	41,423 95
1915-16.	112,827 34	138,594 96	66,071 97	317,494 27	46,862 54
1916-17.	106,861 03	109,234 29	55,615 62	271,710 94	47,327 84
1917-18.	123,295 97	117,621 80	54,359 16	295,276 93	53,515 21
1918-19.	138,876 49	104,048 17	59,048 99	301,973 65	59,349 94
1919-20.	176,973 35	243,141 41	111,918 01	532,032 77	270,698 41
1920-21.	188,597 86	393,096 67	130,421 69	712,116 22	233,282 04
1921-22.	137,662 63	382,272 93	134,628 71	654,564 27	153,904 33
1922-23.	137,343 43	304,771 79	113,437 53	555,552 75	223,657 57
1923-24.	131,580 83	297,600 19	121,182 83	550,363 85	122,435 24
1924-25.	128,897 11	273,227 13	124,025 49	526,149 73	86,218 79
1925-26.	167,560 18	255,491 62	126,095 12	549,146 92	117,755 80
1926-27.	211,667 84	276,838 74	108,987 77	597,494 35	116,072 66
1927-28.	218,889 30	331,157 07	112,532 65	662,579 02	53,377 01
	2,934,744 79	4,949,276 00	2,194,468 14	10,078,488 93	2,574,271 02

STATEMENT SHOWING ANNUAL EXPENDITURE OF, AND REVENUE COLLECTED  
BY THE DOMINION GOVERNMENT ON ACCOUNT OF THE FISHERIES SERVICE  
SINCE 1900.

## YUKON

Year	General Service	Cruisers	Fish Culture	Total	Revenue
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1900-01.....	1,159 81			1,159 81	406 00
1901-02.....	2,066 66			2,066 66	1,130 00
1902-03.....	1,522 00			1,522 00	320 00
1903-04.....	1,400 00			1,400 00	240 00
1904-05.....	1,400 00			1,400 00	340 00
1905-06.....	1,083 31			1,083 31	282 00
1906-07.....	1,030 35			1,030 35	173 00
1907-08.....	1,226 30			1,226 30	274 00
1908-09.....	1,019 00			1,019 00	228 00
1909-10.....	2,416 63			2,416 63	457 00
1910-11.....	1,984 95			1,984 95	907 50
1911-12.....	2,095 00			2,095 00	203 25
1912-13.....	1,909 83			1,909 83	342 00
1913-14.....	1,520 00			1,520 00	226 00
1914-15.....	2,158 80			2,158 80	304 00
1915-16.....	1,794 75			1,794 75	315 00
1916-17.....	1,482 65			1,482 65	275 00
1917-18.....	1,530 75			1,530 75	375 00
1918-19.....	531 50			531 50	425 00
1919-20.....	11 65			11 65	215 00
1920-21.....					280 00
1921-22.....					375 00
1922-23.....					320 00
1923-24.....					330 00
1924-25.....					340 00
1925-26.....					355 00
1926-27.....					350 00
1927-28.....					505 00
	29,343 94			29,343 94	10,292 75



## APPENDIX NO. 10

REPORT OF MR. J. J. COWIE AND MR. G. R. EARL ON THEIR WORK  
IN CONNECTION WITH THE IMPERIAL ECONOMIC COMMIT-  
TEE'S INQUIRY INTO THE MARKETING OF FISH PRO-  
DUCTS OF THE EMPIRE (1927)

We, J. J. Cowie, of the Fisheries Department, Ottawa, and G. R. Earl, of Yarmouth, N.S., having been duly appointed to represent Canada on the Imperial Economic Committee during its inquiry into the fisheries resources of the Empire with a view to discovering a means by which the marketing of fish produced within the Empire may be promoted in Great Britain, proceeded to London and attended the meetings of the committee throughout the month of June and the first half of July last.

The committee's report has now been published. In addition to the reasoned conclusions and recommendations of the committee, it contains a vast amount of information of a very valuable kind. We, therefore, leave the report to speak for itself, and give herein a summarized account of the information and evidence furnished to the committee by us, from the point of view of Canada. We also incorporate in this report the results of personal inquiries carried on amongst the fish trade of Great Britain, with particular regard to the possibilities of profitably shipping fresh fish from Canada to the markets of that country.

## CANADA'S FISHERY RESOURCES

We, in the first place, submitted a lengthy memorandum describing the various individual fisheries and the methods by which each is prosecuted on the Atlantic coast, in the interior lakes, and on the Pacific coast of Canada. Copies of this memorandum were distributed to the members of the committee for their information and guidance. It should be noted that the committee confined its attention to fish and fish products which enter largely into the food of the people of Great Britain.

## THE NEED OF EXTENDED MARKETING

In our evidence before the committee, it was emphasized that while Canada's fishing population is relatively large, the total population is comparatively small and widely separated; that the Canadian market, therefore, only consumes a fraction of the total production of Canadian fish and that the great bulk of it has to find a market outside the boundaries of Canada in either a fresh, salted, or canned condition. It was further pointed out that the effect of the present high tariff against Canadian fish entering the United States has been not only to make it difficult—if not almost impossible—to continue profitably to ship certain kinds of fish to that country, but to cause our young fishermen to seek more remunerative employment in fishing vessels of the United States, where many of them settle and are definitely lost as citizens of Canada and the Empire.

It was impressed on the committee that we were already not seeking to injure the British fishing industry by adding to the competition it has to meet from foreign importations, but that we did feel that there might be some means found by which the very large British importations of fresh fish from Norway, Germany, and Denmark could be displaced by fresh fish from the Maritime Provinces of Canada, to the end that our fishermen might be retained therein and profitably employed.

## POSSIBILITIES OF RELIEVING CANADIAN SITUATION

It was pointed out there are two ways by which the situation in Eastern Canada could be improved: One is by the shipment of fresh fish in ice to the British market. The committee was informed that it had been clearly demonstrated that such fish can be landed overseas in excellent condition but that transportation difficulties retard development until the volume of the traffic, by some means, has grown sufficiently to overcome them of itself. The other is by freezing the fish under the quick process known as brine freezing which leaves the fish, when defrosted, with all the original juices it contained when taken from the sea. It was pointed out that the Canadian fishing grounds were so near the shore in many places as to make possible the landing of fish almost alive, and, if frozen, could be placed on the British markets in a much better and fresher state than most of the so-called fresh fish landed there direct from the fishing grounds.

The committee was further informed that the marketing of brine frozen fish would have this great advantage: the fish need not be dumped on an over-supplied market, but could be held in storage until the markets had recovered and prices had risen.

The adoption of this means of marketing by the British trade, as well as the Canadian trade, would stabilize supply, demand and prices and push out the existing antiquated method of hurrying fresh fish to market and selling them immediately, whether the supply is such as to constitute a glut or a scarcity.

## CANNED SALMON

On the strength of a memorandum dealing with the marketing of cans of salmon for sale in Great Britain, which was submitted to the committee two years ago and which we were called upon to bring up to date, the committee was instrumental in securing an amendment to the British Merchandise Marks Act last year, which calls for the country of origin to be shown on the can or label when the goods are exposed for sale.

By this means, the British consumer will be enabled to select Empire canned salmon in preference to the foreign product. It has to be noted, however, that this is in the nature of a two-edged weapon and unless British Columbia packers scrupulously maintain a high standard of quality, the name Canada on a can of salmon may work to their disadvantage. The effect of the amended marking act is meantime being closely followed.

With a view to having the information passed on to the Empire Marketing Board, we drew the committee's attention to three cases of evident unfair marking. Such canned salmon from three British dealers were found to be on sale in Calcutta, India, as well as in England. In the one case the label simply named the contents as "Fresh Salmon". There was nothing to show whether the fish were sockeye or chums, and nothing to indicate whether the fish were canned in Siberia or Canada. In the second case the Union Jack was prominently displayed on the label, no doubt to give the impression that the contents were produced within the Empire, but in very small letters appeared the legend "Product of Siberia". In the third case the contents were designated "Salmon Steak". No doubt all three consisted of cheap Siberian salmon, which, under an Imperial masquerade, were being sold at a British Columbia sockeye price.

## SCIENTIFIC RESEARCH

The committee was informed in a full manner of what is being accomplished in research work in Canada, through the agency of the Marine Biological Board. It was explained that a biological station is maintained at St. Andrews, N.B., where scientists from the various universities carry on marine research during



the summer months, which is followed up later at their respective universities; that an experimental station had been established at Halifax, N.S., within the last two years for applying the scientific knowledge obtained to the practical work of the industry; that two similar stations were maintained on the Pacific coast, and that research work was also being carried on in the inland lake waters.

As an example of what is being done towards applying scientific knowledge to commercial practice, it was pointed out that a small plant is nearing completion at the Halifax station for the purpose of testing and demonstrating the economic value of the adoption of brine freezing for storing and marketing fresh fish, and that similar work is being undertaken at our Prince Rupert station.

In this connection, it is highly gratifying to find that the committee's principal recommendation is in effect what we suggested and what we are now doing at our experimental stations: That, as the prime essential in improved marketing of fresh fish lies in preserving it in the best condition for sale when and where markets are suitable, and that co-ordinated research such as we are already conducting at Halifax be started on both sides of the Atlantic with a view to determining the best means of preservation.

In addition to the formal evidence given to the committee by us, we had the opportunity of going more fully into the details connected with our fish marketing problems when the committee's report was being drafted and discussed.

#### PERSONAL INVESTIGATIONS

In the intervals between the various meetings of the committee, we frequently visited Billingsgate market; we also visited the markets of Grimsby, Liverpool, and Fleetwood, saw the conditions at first-hand and studied prices and methods of distribution.

In general, we found conditions to be still such as were described by Mr. Cowie in his pamphlet "New Markets for Canadian Fish", covering the result of his investigation of two years ago.

We confirmed the conclusions then reached by him, that there is room in the British market for considerable supplies of fresh fish in ice, such as haddock mainly, of flat fish, also skate wings of the right size and kind, and possibly some cod, during the fall and winter months when bad weather interferes with fishing operations over there and prices are frequently high. Remunerative trading even at that time of the year, however, will depend altogether on the sending of moderate supplies to begin with, of fish of the freshest quality and of the sizes required in packages to suit the established trade.

We found that for haddock, flat fish and skate, the desirable box would be 27 inches long, 15 inches wide and 9 inches deep, inside measurement of half inch for the sides and three quarters inch for the ends, with two thin wire straps round each end to give support. A box of this size contains 6 stones or 84 pounds of fish besides the necessary ice. It is very advisable, however, to add a few pounds more at the time of original packing to allow for some shrinkage in weight. In the event of fairly large cod being shipped, the use of a box measuring inside 30 inches long 18 inches wide, and 9½ inches deep would be advisable.

Each of the following sizes of haddock should be packed separately: one and a half to two pounds; over two and up to three and a half pounds; and over three and a half pounds; all with the head on including the gills but with the guts removed. Cod should be packed separately in sizes of ten to fourteen pounds, and of over fourteen pounds with the head on including gills but with the guts removed. Skate wings of medium size are most desirable, and those with white bellies known in the trade as "rocker" bring the best price. These could be shipped in haddock boxes.



Shipments of fresh fish in ice from Canada would have to be sent on consignment, and as the price in that, as in any consignment market, is determined not only by the supply and the demand on any particular day, but by the condition and size of the fish, the suitability and weight of the package and the nature of the packing, we cannot do better here than repeat and emphasize what was said in Mr. Cowie's pamphlet above referred to, viz.: "If this business is to be sought after in earnest, I would warn you against the danger of each shipper setting out to do as he pleases. Unsatisfactory shipments at the beginning, may wreck the possibilities of a great trade for many years. The business should be undertaken, therefore, in a systematic way. While any individual shipper is free to ship his fish overseas, there should be for the protection of all, and in order to secure and conserve this business which is of interest to the country as a whole, some sort of organized supervision of the shipments to insure uniformity in size and kind of package, in weight and quality of fish and in the method of packing and icing also to regulate shipments from this side and their distribution on the other side, in order, as far as possible, to avoid well supplied market days."

In other words, shippers should co-operate to the extent of having all shipments made up and forwarded under the supervision and control of a shipping committee or of a shipping committee in each district where two or more shippers desire to test this overseas market.

The opening up of this market would be of far reaching benefit to our shore fishermen particularly who produce fish of the more desirable quality. But as there are shipping difficulties to be overcome and as risks of loss would have to be undertaken in the beginning we would commend to the consideration of the department, the matter of giving to shippers financial aid of some kind during the few initial months to overcome discouragements that may arise from consignments arriving on unremunerative market days, and to enable them to hold on and continue until the trade has obtained a sufficient foothold to take care of itself.

While we feel that there is at present room for such a trade during the season indicated above, we at the same time strongly feel that if and when the shipment of brine frozen fish with all the advantages derivable from the storable quality of such can be developed, the benefits flowing therefrom would be immensely greater than under existing conditions, because the demand for and the price of fresh fish in summer would then be equal to what it is now in the fall and winter.

### CANNED FISH

We further looked into the possibility of increasing our fish exports by the development of a trade in canned fish other than salmon and lobsters, and feel that there is room for such, particularly special lines of our Atlantic sea fish prepared in this way. But any development along this line would call for concentrated and sustained effort to find an opening.

### BY-PRODUCTS AND UNUSED FISH

We looked closely into the question of the utilization of fish offal and fish that for various reasons are unmarketable in Great Britain, and we have reached the conclusion that there is a great and ever-widening market for fish meal of the desired quality produced from such.

The initial cost of the machinery for meal making is very considerable. While efforts are being, at present, made to a limited degree to utilize the waste from steam trawler fishing in Canada, the great field covered by our shore fishermen along the Atlantic coast lies, as yet, untouched.

When we consider the great economic benefit now derived by raisers of cattle and pigs by reason of the fact that every scrap of what was at one time waste material is utilized in the manufacture of some by-product, the marketing of which has enhanced the value of such animals, and when we know that there is an unsatisfied market-hunger for the right quality of meal from fish waste, we feel that the throwing away of 30 per cent of the large quantities of fresh fish brought to land by our shore fishermen is a serious economic loss, which might readily be avoided.

There are machines now capable of extracting a sufficient quantity of the oil from such fish as dogfish and leaving a high-class meal fit for animal and poultry feeding. If, then, fish-meal-making plants at which dogfish could be used as well as the waste from cod and haddock and such like non-oily fish were in operation at several centres to which material could be taken from stretches of coast on either side, it would be a very great inducement to fishermen to increase their fishing and earning power.

It is well known that at present when dogfish come on the coast, fishermen practically stop operations rather than continue hauling their lines loaded up with these fish and with very few or none of the food fishes. But, if the shore fishermen were once assured that they could dispose of every dogfish and every other non-edible fish at a price to a meal-making plant, in addition to the benefit they would derive from the increased quantity of edible fish they would then bring to land, their outlook and material state would quickly change.

We strongly feel that the establishment of central meal-making plants on the Atlantic coast is of as much importance as the finding of new markets for fish as a means of rebuilding our fishing fleets and retaining our fishermen. If, therefore, firms of standing engaged in the fisheries could be induced and encouraged to take hold of this means of development, there would appear to be no room for doubt that a shore fishery greater than has yet been on the Atlantic coast would quickly emerge from its present low unprofitable state.

To summarize, in conclusion, the main features of the foregoing report, which in our opinion would bring immediate beneficial results to the fishing industry of our Maritime Provinces, we would note that these are two, namely:—

1. The marketing of fresh fish in ice in Great Britain and
2. The establishment of meal-making plants to take care of the great amount of material at present being wasted.

## APPENDIX NO. 11

## REPORT ON THE FISHERIES OF THE MACKENZIE RIVER DELTA

INSPECTOR V. A. M. KEMP, R.C.M.P.

Pacific salmon have not been seen about the mouth of the MacKenzie, or along this portion of the Arctic coast, as far as is known to the R.C.M. Police or from inquiries among the natives.

A species of salmon, variously called "Arctic Trout" and "Salmon Trout," is found in the salt waters around the coast, but as the water for some distance around the mouth of the MacKenzie and east and west along the coast for a radius of twenty or thirty miles, is fresh these are not found in the immediate vicinity of the Delta. The salmon trout referred to are of a dark green colour with light coloured bellies, and their weight runs from about two to six pounds. The meat is very similar to Pacific salmon both as to colour and taste. These fish are speckled reminding one somewhat of the speckled trout found in the rivers in the eastern part of Canada.

Apart from these salmon trout the other salt water fish found on the coast are herring and tom cod. The herring are the most numerous fish on the coast and as they are entirely similar to their brethren met with elsewhere in salt water fisheries, I will not describe them. The tom cod is a small fish from four to eight inches in length, and is found in the waters after freeze up begins, as the natives catch them by jigging through the ice. They are rather tasteless as to meat, and in view of their diminutive size, it takes a considerable catch, to make a satisfactory meal particularly for the natives to whom fish is one of the main foods. Whether these fish migrate when the severe winter sets in I am unable to state.

In the fresh waters of the Delta, the fish caught are white fish, jack fish, loche, crooked backs and conie. The first three named are fairly numerous, as are also the crooked backs. The conie is not so frequently met with as the others, but owing to its bulk, a considerable amount of the meat is secured. The conie weighs up to thirty and forty pounds, and Stefanson, who traces the origin of the name to the French "L'inconnu" states he has heard of them reaching as high as seventy pounds, although the largest he saw weighed forty pounds. He also states that this fish used to be called MacKenzie river salmon, although it bears no resemblance to the usual variety of salmon.

The two best places for fishing in the district appear to be Shingle Point and Kittagaruit. The former place is for salt water fishing and herring are the most common fish caught there. At Kittagaruit, just below the mouth of the river, the water is fresh, and white fish, crooked backs and conie are found there.

As marine animals are included in the definition of "fish" according to the Fisheries Act, I might mention that white whales are fairly numerous around the mouth of the Mackenzie river. At White Fish Station, some eight miles from Moose river, the most Westerly outlet of the MacKenzie, these white whales are fairly plentiful, and the natives hunt them at this place, which owes its name to the whale in question, the native name for it being "White Fish." It is highly prized by the Eskimos who eat the flesh and use the skin for water proof boots.



Bow-head whales are rarely seen in the waters close to the coast, and I believe it is some years since one was seen close to Herschel island. One is occasionally sighted off Baillie island, but they are by no means common even in those parts.

Hair seals are of course fairly numerous, and are much sought by the natives, who use the skins for clothing and the meat for food.

The above report covers the various species of fish found in salt and fresh waters in the vicinity of the MacKenzie Delta.









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